A

NEW SYSTEM

OF TREATING THE

HUMAN TEETH:

EXPLAINING THE CAUSES WHICH LEAD TO THEIR DECAY, AND THE MOST APPROVED METHODS OF PRESERVING THEM:

WITH

COPIOUS & EXPLANATORY NOTES.

TO WHICH IS ADDED, SOME ACCOUNT OF

A DISCOVERY MADE BY THE AUTHOR

FOR THE

CURE OF TOOTH-ACHE AND TIC-DOULOUREUX, &c. &c.

SECOND EDITION.

By J. PATERSON CLARK, M.A.
DENTIST.

AVEC DE MAUVAISES DENTS JAMAIS FEMME N'ETOIT BELLE.
AVEC DE JOLIS DENTS JAMAIS FEMME N'ETOIT LAIDE.

J. J. Rousseau.

LONDON:—PUBLISHED BY

LONGMAN, REES, ORME, BROWN, AND GREEN.

1830.

W. WILSON, PRINTER, 57, SKINNER-STREET, LONDON.

ADVERTISEMENT

TO THE

FIRST EDITION.

As many persons have lately begun to announce the discovery of Cements for the cure of Tooth-ache, and as their various processes—whether good, bad, or indifferent—may be confounded with the one pursued by the author of the following Treatise; he conceives that he is but doing common justice, both to the public and himself, in taking this opportunity to state, that he first began to apply successfully an Anodyne Cement for the cure of Tooth-ache, towards the close of the year 1825;—that shortly afterwards, while residing in King

Street, and subsequently in Percy Street, he announced his discovery by repeated advertisements ;—that until the year 1828, no other individual had ever applied the term "Cement" to any substance used for stopping teeth, as, did occasion call for such proof, he could satisfactorily attest ;—that the Anodyne Cement is not, and never was, intended as a permanent stopping for teeth, but simply as a means for allaying pain, and destroying the sensibility of tender teeth, and thereby permitting them to be cleansed and permanently stopped with gold, or other foil, in the usual way, without pain ; —that Fusible Metal, and Mercurial Amalgams, from their nature, are incapable of being so applied to living teeth as to resist the admission of air and moisture, (the causes of decay in carious teeth,) and have no power to allay suffering, or permit the carious portions of such teeth to be cut away, previously to their being permanently stop-

ped,—and that no tooth was ever so preserved, nor ever will be.

With regard to the present publication, the author has merely to observe that it was suggested, partly by the explanations he was professionally called upon daily to afford his patients, and partly by the vast and varied mass of notes, original and collated, which from time to time he had put together for the purpose of duly refreshing his memory on the subject of his particular profession. He has, however, scrupulously and severely condensed his materials, retaining only those annotations which bear immediately on the point he would wish to illustrate. Each separate note, therefore, serves to illustrate the author's views to a certain extent, while the aggregate gives a clear and intelligible idea of the progress of the Dentist's art up to the present period. It details also the growth and decline of the human

teeth, from infancy to age; and as it is a collection resulting from long, varied, and diligent research, it is hoped that it may be approved of by medical men; and that the volume, in which it is contained, may occupy, in the libraries of private families, some portion of the shelf appropriated to books of reference.

The author trusts for success to the variety of his facts, the practical character of his remarks, and the utility as well as novelty of his practice.

5, Sackville Street, Piccadilly.
London, January 1829.

ADVERTISEMENT

TO THE

SECOND EDITION.

ENCOURAGED by the rapid sale of the First Edition, and by the approbation of eminent professional men and others, the author of these pages has ventured to extend his observations, where from inadvertence or otherwise he had failed sufficiently to convey his meaning.

In the present edition will be found some practical remarks, addressed to Medical Students, who it is attempted to be shown, from a want of even a slight acquaintance with the mechanical part of the Dentist's

art, are frequently led into error: as, for instance, when any or all the double teeth being lost while the front ones remain, the pressure of mastication falls exclusively on the latter. The front teeth of one jaw perpetually rubbing against those of the other, shake and loosen them in their sockets, occasioning a diseased action in the parts; or, like millstones at work, they waste each other's substance. Diseases thus produced, the Medical Student, without reference to an accidental and mechanical cause, is taught to consider as unaccountable and incurable. In illustration of this position, the reader is referred to the chapter quoted from a recent publication, at page 128; with the remarks bearing on the subject, commencing at page 120; and to the article on Artificial Teeth.

In the present edition, the notes, which express the opinions of others in their own

words, are placed under distinct heads, in an additional table of contents, with a reference to the pages where they are to be found; and may be advantageously perused as a sort of system, made up of almost every known system of treating human teeth.

That the method of treating diseases of the teeth, invented and brought forward by the author, is daily gaining ground in public estimation, may be learned, were other and more substantial proofs wanting, even through the doubtful medium of advertisements; a review of the pretensions of which, from their number and nature, and the errors to which they might lead, will be found in the sequel.

5, Sackville Street, Piccadilly.
London, November 1829.

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WITH THE

AUTHORITIES* FROM WHICH THEY ARE DERIVED;

WHICH THE READER MAY FORM INTO A SORT OF SYSTEM, THAT MAY BE ADVANTAGEOUSLY ARRANGED AND PERUSED UNDER THE FOLLOWING HEADS.

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* Parmly.
Lawrence.
Fox.
J. Hunter.
Dr. Hunter.
Koecker.
Murphy.
Levison.

Dr. Hooper.
Sigmond.
Medical Adviser.
Wooffendale.
Thomas Bell.
Blake.
Gerbaux.
Fuller.

Dr. Underwood.
Charles Bell.
Alexander Monro.
Bew.
Sir Henry Halford.
De Chemant.
A. Clark.
London Medical and Physical Journal.

A NEW SYSTEM

OF TREATING

HUMAN TEETH.

CHAPTER I.

INTRODUCTORY REMARKS.

While the laws of nature in every department of the material universe have been successfully investigated, it is surprising how little has yet been done in a branch of anatomy immediately connected with the comfort and convenience of every individual member of society. It is unnecessary to insist on the great importance of the human teeth: the pains attendant on teething, and their decay, are equally proverbial. Although gradual and near approaches towards a full exposition of their nature have been already made in the dissertations that have appeared from time to time on the teeth, the

Author of the present Treatise trusts he will not fall under the imputation of illiberality, if he takes leave to assert, that uncertainty continues to hang over the subject, and that a comprehensive system, grounded on satisfactory and consistent principles, is still a desideratum.

Perhaps no prejudice retains so powerful a hold on the public mind as the prevalent impression, that the teeth are influenced by some mysterious agency, which baffles all attempts to allay, much more to obviate, their diseases. Most persons have, at one period or other of their lives, experienced such diseases; but they have been accustomed to look on them as evils inseparable from humanity, and have patiently witnessed their approach, and borne their effects, till impelled by intolerable pain, they have sought professional skill, not so much from a principle of hope, as of desperation.

Every analogous instance, however, of the providence of the great Author of Nature, discountenances the supposition that he forms imperfectly so important a branch of the animal economy as the teeth;—notwithstanding this,

even professional men have so far fallen in with received opinion, as to consider original imperfection of design the great source of dental decay.

Led to conclude that the teeth are intended to last for life, subject only to the gradual decay incident to the other parts of the body, that they are regulated by simple laws, and originate in definite causes within the reach of a counteracting process, it has been the object of the Author of the following pages, by long and studious attention to the appearances of the teeth in the various stages of decay, to ascertain the source of their diseases; and on correct principles to provide the proper remedies. He trusts he may indulge the idea that his observations will avail much in removing the discouraging notion, that dental disorders are hopeless and hereditary; and also that the principles he advances will go far to preserve instruments so essential to the comfort and well-being of mankind.

CHAPTER II.

GROUND-WORK OF THE SYSTEM.

SECTION I.

THE ground-work of the system here offered to the public, is, that Caries, or Decay of the teeth, in every instance, commences externally; and that remedies externally applied will arrest, if not prevent, it altogether; also, that although disease originates in this manner, it does not do so indiscriminately over every portion of the surface of a tooth, nor at the apparently corresponding parts of an individual set, but at points common to the same class* of teeth in all mankind, where, from their natural shape, or other accidental peculiarity, the morbid action necessarily commences. In an individual set, disease generally attacks them in pairs from the same

* For a description of the classes into which teeth are divided, see note at page 51.

causes, viz. their shape, and the circumstances in which they are placed at every stage of their existence, being similar. The pairs here meant are the corresponding teeth in each side of a jaw. Perhaps it might be proper to say that they decay in double pairs, the same rule being equally applicable to the corresponding teeth of the upper and lower jaws.

Disease is known in many instances to originate, notwithstanding the utmost attention to cleanliness, which can only be satisfactorily accounted for from the shape of the teeth, as decay always commences in parts that are inaccessible to the ordinary and daily processes of cleaning; the very attempt, however, will always protract the period of decay.

In general it may be presumed that the saliva in a pure state is not calculated to injure the teeth; such portions, therefore, of the enamel as are exposed to its newly-formed supplies are seldom affected, and indeed we consequently never find the more prominent parts of teeth the first to become carious. Even the bony substance, when left unprotected, by the removal of the enamel,

on being filed, broken off, or worn down, when its surface admitted of being kept clean, is known to continue sound for years, though of course less calculated than the enamel to resist decomposition. Sooner or later, however, such tooth will absorb sufficient moisture from without to change and darken its colour, which, from the transparency of the enamel, itself unchanged, gradually becomes perceptible.

When indentation, or such like inequality, occurs, as on the grinding surfaces of the double teeth, the juices of the mouth there become stagnant; their properties change, and they exert a pernicious influence, aided by putrifying particles of alimentary substances, which likewise necessarily lodge there. Should this deleterious matter be left undisturbed, like stagnant filth, it acquires greater virulence, as the breath as well as caries of the teeth of many persons will abundantly testify*; for the breath is oftener af-

* *Fœtid breath* is occasioned entirely by the state of the mouth, and has no connexion with that of the stomach, as erroneously supposed.

By a Chemical Agency on those relics of the food which accidentally lodge between them, a deleterious change takes place,

fected by the state of the teeth than that of the stomach—the former being of a permanent, while the latter is of a temporary character. The difference between the two causes may be ascertained by shutting the mouth and breathing only through the nose. If, however, it be daily and efficiently subjected to the tooth-brush, previously dipped in an antiputrescent wash, as spirits of wine, or even strong toast-water, its noxious influence will become comparatively feeble.

Indeed were it possible to reach at and keep clean every part of a tooth, it is presumed that no caries would ever take place. The peculiarities, then, which chiefly engender caries, have reference to the natural shape of the teeth, and the proportion they bear to the jaws in which they are*.

constituting an active poison, which corrodes their structure.—L. S. Parmly.

* The teeth of men are distinguished by being all of one length, and by the circumstance of their being arranged in an uniform unbroken series. The cuspidati are a little longer than the others at first; but their sharp points are soon worn down to a level with the rest. In all animals the teeth of different classes differ in size and length, often very considerably; and they are separated by more or less wide intervals: this is particularly the case with the teeth called canine, or cuspidati, which are long, prominent, and distinct from the neighbouring teeth; their not projecting be-

These peculiarities may be divided into three classes, viz. the Natural Shape of the Human

yond the rest, nor being separated from them by any interval, is, therefore, a very characteristic circumstance in the human structure. Even in the Simiæ, whose masticatory apparatus most nearly resembles that of man, the cuspidati are longer, often very considerably longer, than the other teeth, and there are intervals in the series of each jaw to receive the cuspidati of the other.

The inferior incisors are perpendicular: the teeth, indeed, and the front of the jaw, are placed in the same vertical line. In animals, these teeth slant backwards, and the jaw slopes backwards directly from the alveoli; so that the full prominent chin, so remarkable a feature in the face of our species, is found in no animal, not even in the Ourang-outang: it appears as if the part were cut off.

The obtuse tubercles of the grinders are again very peculiar and characteristic; they are worthy of particular remark, because, being the great instruments of dividing the food, they correspond to the kind of nourishment which the animal naturally takes. Their surface does not resemble the flat crowns with rising ridges of intermixed enamel, belonging to our common herbivorous animals; nor are they like the cutting and tearing grinders of the carnivora, but they are well adapted to that mixed diet prepared by the arts of cookery, which man has always resorted to when he could get it, and when his natural inclinations have not been thwarted by the interference of religious scruples or prohibitions, nor opposed by his own whims and fancies.

The lower jaw of man is distinguished by the prominence of the chin, a necessary consequence of the inferior incisors being perpendicular; by its shortness, and by the oblong convexity and obliquity of the condyles

On this subject of diet a question naturally presents itself; whether man approaches most nearly to the carnivorous or herbivorous tribes in his structure? What kind of food should we assign to him, if we judged from his organization merely, and the

Teeth,—Lateral Pressure against each other,—and Accidental Causes of Decay.

analogy it presents to that of other mammalia? Physiologists have usually represented that our species hold a middle rank in the masticatory and digestive apparatus, between the flesh eating and the herbivorous animals;—a statement which seems rather to have been deduced from what we have learned by experience on this subject, than to result fairly from an actual comparison of men and animals.

The molar teeth, being the instruments employed in dividing and preparing the food, must exhibit in figure and construction, a relation to the nature of the aliment. They rise in the true carnivora, into sharp pointed prominences; and those of the lower shut within those of the upper jaw;—when the series is viewed together, the general outline may be compared to the teeth of a saw. These animals are also furnished with long pointed, and strong cuspidati or canine teeth, which are employed as weapons of offence and defence, and are very serviceable in seizing and lacerating their prey; they constitute in some animals, as the lion, tiger, &c. very formidable weapons. The herbivorous animals are not armed with these terrible canine teeth; their molares have broad flat surfaces, opposed in a vertical line to each other in the two jaws. Plates of enamel are intermixed with the bone of the tooth in the latter, and as its superior hardness makes it wear less rapidly than the other textures of the teeth, it appears on the grinding surface in rising ridges, which must greatly increase the triturating effect. In carniverous animals the enamel is confined altogether to the surface of the teeth.

The articulation of the lower jaw differs in the two cases as much as the structure of the teeth. In the carnivora it can only move backwards and forwards, all lateral motion being produced by the rising edges of the glenoid cavities: in the herbivora it has, moreover, motion from side to side. Thus we observe in the flesh-eaters, teeth calculated only for tearing, subservient, in parts at least, to the procuring of food, as well as to purposes of defence;

The first class, viz. Their Shape, which is common to the teeth of All, although more

and an articulation of the lower jaw, that precludes all lateral motion. In those which live on vegetables, the form of the teeth and the nature of the joint, are calculated for the lateral or grinding motion. The former, having rudely torn and divided the food, swallow it in masses; while in the latter it undergoes considerable comminution before it is swallowed. The teeth of man have not the slighest resemblance to those of the carniverous animals, except that their enamel is confined to the external surface; he possesses, indeed, teeth called canine, but they do not exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carniverous animals. The obtuse tubercles of the human molares have not the most remote resemblance to the pointed projections of these teeth in carniverous animals; they are as clearly distinguished from the flat crowns, with intermixed enamel, of the herbivorous molares. In the freedom of lateral motion, however, the human inferior maxilla more nearly resembles that of the herbivora.

The teeth and jaws of man are in all respects much more similar to those of monkeys, than of any other animals. A skull, apparently of the ourang-outang, in the Museum of the College, has the first set of teeth; the number is the same as in man, and the form so closely similar, that they might easily be mistaken for human. In most other Simiæ the canine teeth are much longer and stronger than in us; and so far these animals have a more carnivorous character. The points and ridges of the molares in Simiæ, are distinguished by their sharpness, from the peculiar obtuse tubercles of the human molares.

We find, that whether we consider the teeth and jaws, or the immediate instruments of digestion, the human structure closely resembles that of the Simiæ; all of which, in their natural state, are completely herbivorous.

I do not infer from these circumstances that man is designed by

strongly marked in Some than in Others, may be called the Primary cause of decay: the next, Lateral Pressure, (with some slight limitation, arising from the circumstance, that it is not necessarily an inherent principle in the teeth themselves,) may also be styled a Primary cause of decay: the third class may be aptly styled Secondary and Accidental, as it has no determinate existence, and is besides modified by circumstances.

SECTION II.

Shape of the Teeth a Cause of Decay.

In referring to the shape* of the teeth as a cause

nature to feed on vegetables, or that it would be more advantageous to him to adopt that diet. The hands and the arts of man procure for him the food which carnivorous animals earn by their teeth. The processes of cookery bring what he eats into a very different state from that in which it is employed, either by carnivorous or herbivorous animals. Hence the analogy in the modes of procuring and preparing food is too loose for us to place much confidence in the results of these comparative views. We must trust to experience alone for elucidating the great problem of diet: its decision has been long ago pronounced, and will hardly now be reversed.—Lawrence's Lectures.

* *The cause of caries* has not been satisfactorily explained, from the structure of the teeth not having been duly considered.—Jos. Fox.

of their decay, it may facilitate the investigation to divide them into two classes; Incisors, front or single-edged teeth, and Molares, back or double-edged teeth*. The former have but a single root as well as crown each; the latter have two or more. The crown is the part of a tooth that protrudes beyond the gum; it is covered with enamel harder than bone, and in the first class begins to ossify from one point or cutting edge†. In the second class the crown begins to ossify at different points, like two or more single teeth, and we consequently find that the double teeth have a number of prominent points on their crowns, corresponding in some measure with the number of their real or apparent roots. These teeth resemble two or more single teeth tied to-

* The edge of each row is single at the fore part of the jaws, but as the teeth grow thicker backwards, it there splits into an internal and external edge.—HUNTER.

† Where the teeth begin to ossify at one point only, as in single fanged teeth, that ossification gradually advances till the tooth is entirely completed; but if there are more than one point of ossification, as in the grinders, according to the numbers of its points, each ossification increases till their basis come in contact with one another, and there all unite into one; after which they advance in growth as one ossification.—HUNTER.

gether, with a coating of enamel spread almost equally over them. Where they unite, a furrow appears, in some persons very deep, in others moderately so, or scarcely perceptible. Indentations exist not only on the grinding surfaces, or parts of the double teeth where they meet those of the other jaw in mastication, but also on all their sides, from the gums towards those surfaces. Incipient decay makes its appearance by gradually darkening specks and lines in these indentations; and wherever such symptoms present themselves, a natural hollow will be found to exist. That these indentations, common to the double teeth, are occasioned, at the time of their first formation in the jaw, by the gradual approach of the various points of their ossification to each other, is proved by the appearance of front teeth when they grow, as they sometimes do, in the shape of monsters. Such as an eye-tooth for instance, perfectly united with a lateral incisor, in front of the mouth, having two distinctly marked crowns and roots, with their separate nerves, &c. and yet having but one socket, and as perfectly united as the component parts of the double teeth.

A further proof may be found in the acknowledged fact, that double teeth, the elevated points of whose cutting edges diverge, have their roots more nearly approaching to each other in the jaws, while those whose edges approach each other, narrowing from the gum towards their grinding surfaces, have more diverging roots, and are consequently more difficult of extraction. It is deserving of remark, too, that in persons whose double teeth are not liable to decay, from their natural shape, for the single teeth rarely become carious from this cause, their grinding surfaces shall be found more even and unbroken, and consequently less capable of retaining moisture, &c. long enough to become decomposed, than the teeth of those who lose them early; although the process of original construction in the manner just described, and an apparent joining of several parts, may be distinctly traced in every instance.

The distinctive features of the teeth, like those of the face, run in families to remote generations. Where either parent has had exceptionable ones, such of the children as have them similarly form-

ed, are similarly affected with caries, tooth-ach, &c.; and if both parents have indifferent teeth, the children rarely escape, unless by the intervention of art. Hence it is that in many families some of its members never experience tooth-ach, while others are its constant martyrs.

When the enamel has been accidentally broken off, or penetrated by the impure matter necessarily retained in the dark speck or line, and the disease, in consequence of the action of the external air and moisture of the mouth has communicated with the softer or bony substance of a tooth, it advances rapidly, eating away the interior till the enamel, deprived of its usual support, gives way, and the cavity, thus gradually formed, is exposed*. Nothing can be more deceitful than this species of decay, especially when between two teeth. Its commencement and progress requires the watchful attention of a practised eye; its consummation alone being in

* If a sound tooth be broken by accident, so as to expose the cavity, no such quick decay ensues (as of a diseased tooth): however, we sometimes find in those cases, that exposure of the cavity will produce a decay, and even pain, similar to an original disease.—HUNTER.

general the only proof calculated to awaken the suspicions of the sufferer. One person's teeth shall decay as much in a week as those of others during a whole year. A sound tooth, steeped in acid for a short period, shall be deprived of its enamel: its adhesive or cementing quality being totally destroyed, it is reduced to the state of soft chalk. On this principle may be reconciled the thousand and one contending opinions as to the cause of decay in teeth; for it is known that the stomach is a sort of laboratory, where, in civilized society, chemical experiments are being constantly tried. These experiments extend to the region of the teeth. Were it possible to keep every part of a tooth at all times perfectly clean, it is presumed that decay would be as slow to commence in the hollow as in the prominent parts. The reason why this species of decay never appears in front teeth is that they have but single pointed wedge-like shapes, on whose surfaces no indentations exist, as in the double teeth, for the lodgment and decomposition of food or moisture.

That the external form of the grinders, there-

fore, is a primary cause of decay, is further proved by the undeniable fact, that the teeth of healthy, are as liable to disease as those of unhealthy, individuals; teeth which are of a hard, flinty texture, as those that are soft, delicate, or of a bad colour.

The natural shape of the incisors, properly, the four front teeth in each jaw, and of the eye teeth, which are situated as strong barriers between the single and double teeth, is, when in their most perfect state, favourable to their preservation, except against lateral pressure and foulness. To the former of which all the teeth of a set are of course equally liable; while the bicuspides, or, as they are called, two small grinders, in each side of the mouth, next beyond the eye-teeth, being formed each like two incisors or wedges joined together, are, from such shape, liable to decay in their grinding surfaces only*; and that where the

* Though this disease attacks all the teeth without distinction, yet it may be considered as a general rule that the grinding teeth more frequently suffer from this malady than the incisors and cuspidati; and that the bicuspides or small grinders, incisors and cuspidati of the upper, are generally much more subject to caries than the same teeth in the under jaw. The large grinders are

furrow which lies between their double points readily retains whatever it is in the moisture of the mouth that proves injurious. The large, or double grinders, from their shape of three or more small teeth united, and from their deep depressions on all sides, but more especially on their broad uneven grinding surfaces, are extremely liable to decay.

A diligent and extensive examination of the human teeth, will convince the candid inquirer, that appearances at least are much in favour of what has just been stated; and that incipient decay may always be traced to those natural indentations inseparable from the double or back teeth. Were the commencement of caries internal, as many seem to think, it would assuredly manifest itself equally in all the teeth of a set, or at least in a sufficient number of instances to put

affected with this disease most commonly on the grinding surfaces, whereas the small grinders and front teeth generally suffer from it on those sides which are in contact with the adjoining teeth.—Leonard Koecker.

It is often observed on the hollow parts of the grinding surface of the molares, and there looks like a crack filled with a very black substance. In the incisors, the disease usually begins pretty near the neck of the tooth.—Hunter.

the question at rest; but the author never met with a case where, after due scrutiny, he could justifiably think that it had commenced internally. On the contrary, he has invariably, as well in similar as in cases different from those enumerated above, when the enamel exhibited opacity or any other unnatural appearance on being cut or filed, come to wholesome enamel or bone, according to the stage at which the caries had arrived. However minute be the lines or indentations on the surfaces of carious teeth, and they are often so minute as not to admit the finest point, they will be found in such cases to have admitted moisture to the bony substance; in the way that glass or china when cracked will no longer be impervious to liquids, in some instances even before such crack or fracture can be perceived. The inquirer, however, will be gratified to find that such natural indentations always point, in the hands of the skilful, to an easy and a perfect remedy; for if the incipient decay be cut out, and its place supplied with a plug sufficiently durable, and rendered perfectly air and water tight, such tooth will last during

the remainder of life. Cleanliness, however, is of the very utmost importance; also that the teeth be duly inspected, and on the first symptoms of decay be attended to, as hinted at above.

There is one more trait connected with the decay of the teeth, from their superficial structure, extraordinary, but at the same time true. A dead tooth, like common ivory, would last in favourable circumstances for an unlimited period, which if artificially fastened, and used in the mouth, would become subject to the same laws as regulate the decay of living ones. In the case of a false or artificial tooth, pivoted or grafted on the root of another, if the enamel be entire, no decay of its substance will take place in the mouth, except where it is joined to the old stump, for however fine their junction, moisture gradually insinuates itself between, when the bone of the tooth becomes dark and soft, until at length the gold pivot begins to feel loose, both in the dead tooth artificially fixed, and in the stump to which it is attached. Should any flaw, such as an old caries, or a cavity artificially formed, exist in the false tooth, it gradually passes

through the usual stages of decay that proceed from the shapes of teeth. The same thing happens to artificial teeth formed from those of the sea-horse, or any other animal substance*.

After the double teeth, from these causes, have partially or altogether disappeared, in shutting the mouth an undue action of the front teeth of the one jaw takes place† against those of the other. This state of affairs is generally to be found in elderly persons, whose teeth have been neglected or badly managed. The pressure thus unceasingly, and in general laterally applied, is often accompanied with pain, and has the effect of wasting and loosening the front teeth, which consequently soon begin to drop out quite sound, accompanied by considerable irritation of the gums after the absorption or loss of the bony sockets, the only proper supports of the teeth.

* Artificial teeth composed of animal substance, or natural teeth which are artificially placed to supply accidental deficiencies, having no vital principle to resist the effects of the heat and moisture of the mouth, are affected with caries, similar in appearance to that which affects the living teeth.—Jos. Murphy.

† See article Artificial Teeth, with cases, at the end of the volume.

Hence it is that in old age we see so many toothless persons, particularly of the humbler classes, for the wealthy, very properly, have recourse to artificial aids. Whence it may fairly be inferred, that the natural Shape of the teeth, aided by the circumstances in which they are placed, being liable to be affected by every change, whether of derangement of the stomach or debility of the whole system, is a Primary cause of their decay.

Before dismissing this subject it may not be out of place here to call attention to the sufferings of children previous to, and during the period of shedding their first, or milk-teeth, they being equally liable to decay and pain from their shape as the permanent ones; and perhaps more so from adventitious circumstances, the principal of which is the want of cleanliness, while the little sufferers are often unable to point at the real seat of pain, and when they do, extraction is unfortunately supposed to be the grand remedy. But of this in its proper place.

SECTION III.

Lateral Pressure a Cause of Decay.

It may be remarked generally, that teeth when in close contact in a jaw, are much more liable to decay laterally, where they touch each other, than those that do not come in contact. Perhaps it would be difficult to instance a case of lateral decay where the teeth do not touch. They often have not sufficient room in the jaw, which occasions them to press against each other. When the disproportion between a jaw and its teeth is so great that the latter can scarcely find room in the natural dental circle, their consequent pressure against each other proves injurious; partly by cracking the unyielding flinty substance of the enamel, and thereby subjecting it to the admission of moisture; and partly by diminishing the internal free supply of nourishment to the tooth at that part, or pressing out its cementing principle, as in analogous cases of ligature; and perhaps principally by forming a rallying point

for the irremediable lodgment of impurities, as in natural indentations of the double teeth. Whether all or any of the causes here assigned be the real source of caries or not, certain it is that crowded teeth decay in this manner. This deduction is strengthened by the fact, that where the disproportion between the teeth and jaws is so very great as to force a sufficient number of the former completely out of their proper circle, producing the appearance of supernumerary teeth, and preventing their pressing against each other, no such decay is ever found. In all cases of caries, when disease has once commenced, however minute be its first appearance, it rapidly spreads.

In treating of caries from their natural shape, it has been emphatically stated that only the double teeth suffer in the first instance, and that the peculiar shape and smooth surface of the front teeth render them less obnoxious to this species of decay. It becomes then here especially deserving of remark that all the teeth of a set are liable to decay from lateral pressure, although not in the same degree. The unfortunate double

teeth, on their appearance, are, from their square compact shapes, less capable of quitting the dental circle. Hence we find, that although naturally supposed to be stronger than the front teeth, they are in reality more liable to every species of decay: the front ones, from their thin wedge-like shapes, and the yielding nature of the alveolar processes, or bony sockets of teeth, readily slide past one another, and are consequently freer from lateral pressure. The front teeth of the upper jaw* are more subject to caries from this pressure than those of the under, because they are slenderer, and present a larger and more delicate surface in front.

It may here be remarked, that lateral pressure, so sure a source of decay, is often induced by mismanagement; and perhaps it may be added,

* The fore teeth in the lower jaw appear to be less subject to this disease than any of the others: the fore teeth in the upper jaw, and the grinders in both, are of course more frequently affected.—HUNTER.

The incisors are often destroyed by caries: it generally commences on the sides, and this happens most frequently where they are irregular, or pressed very closely together for want of room.—JOS. MURPHY.

that this observation applies more to those classes of society for whom too much rather than too little has been attempted by the dentist; as irregularities are, from premature extraction of the shedding teeth, more frequently met with in high than in humble life*. Sometimes, however, the jaws are too diminutive to contain their full complement of teeth, in which case a judicious thinning of their numbers would certainly prevent lateral pressure; but before having recourse to so unnatural a remedy, as a permanent tooth once extracted cannot be restored, due allowance must be made for the age and probable enlargement of the jaw. The principle only applies to the permanent set of teeth. A more desirable practice would be to enlarge the whole dental circle of the jaw, by the temporary use of an elastic metallic plate, formed to a model of the mouth, as is usually done to regulate the direction of young persons' front teeth, when they grow irregularly.

Disproportion between the teeth and jaws,

* See Note at page 51.

may be occasioned by a natural conformation of the parts, or it may be the unnoticed effect of accident; for we seldom find any such disproportion, and consequent irregularity, in the arrangement of the teeth of men, when, like inferior animals, in a state of nature*. The size and form of the teeth, like those of the body, being in a great measure hereditary, may possibly be regulated by a different law from that of the jaws themselves. The former, when first completely formed, are of the fullest dimensions they can ever attain, while the size and form of the jaws are controlled by the accidents of life, which not unfrequently interfere with the original design of nature; as in the case of maimed, deformed, and ricketty persons.

It cannot be too strongly urged, that where, by the first intention, the teeth and jaws are in

* In the teeth of all animals in a state of nature, we discover no diseased structure or deformity, and therefore we must ascribe it in the human subject to *fortuitous*, not *constitutional*, or hereditary causes; for that they are less destructible than any other part of the frame is evident, since in places where bodies have lain for centuries, teeth are found entire and sound, while the other bones crumble to dust.—PARMLY.

just proportion to each other, if a tooth be extracted before the jaw has attained its full growth, or, if a shedding one, before the new tooth is ready to supply its place, the adjoining ones will approach each other, filling up the space, until there is little or no room for a permanent tooth instead of the one extracted.

With reference to decay by pairs, we may here repeat that teeth generally grow in that manner, and are consequently subject to the same degree of lateral pressure, from their similarity of shape and situation. This is proved by watching and plugging a faulty tooth in one side of the mouth, leaving the corresponding one on the other side to its fate, which will inevitably be removed by gradual decay, or by the dentist.

Caries from lateral pressure in general makes its first appearance in the shape of a small darkening speck, at the point where two teeth are in severe contact; hence the prevalent observation that the decay of one affects another. Although this is literally correct, the opinions that prevail respecting the cause and manner of such affections, are extremely vague and erroneous;

for disease in one tooth affects not another unless the carious portion, with its diseased contents, be in actual and continued contact with the adjoining tooth. This speck* gradually enlarges, as the enamel becomes decomposed by the agency of the impure matter which constantly lodges there: it also makes its way to the bone, which, from exposure to air and moisture, soon becomes soft and spongy, and is consequently well adapted for retaining the noxious principle that destroys teeth.

Teeth thus situated begin, thermometer-like, to indicate the changes of the weather, and to be affected on the application of heat and cold.

The caries, meanwhile, gains ground; and not unfrequently, before any external appearance would indicate decay, the whole bony substance has disappeared in filthy fluid†. In consequence of which, while only chewing a hard biscuit, or cracking a nut, &c. the thin, and apparently un-

* We can observe in those teeth where the disease has not gone deep, that from the black speck externally there is a gradual decay or alteration leading to the cavity, and becoming fainter and fainter.—HUNTER.

† It may be years before any serious injury is discovered, although pain may be frequently felt.—I. L. LEVISON.

broken shell of enamel, often gives way and breaks dow.

Decay from lateral pressure, like that from the natural shape of a tooth, is equally common to shedding as it is to permanent teeth, to strong as to weak ones; to those of persons who enjoy the most perfect health, as to those who are sickly; and moreover, to every tooth in an over-crowded set, which it is presumed would not be the case were the commencement of caries internal, and were the disease itself, rather than its cause, hereditary. On the removal of any tooth that has decayed from lateral pressure, black specks, or a more forward state of disease, is invariably to be seen in the adjoining teeth, at the points where it was in contact with them. If the faulty tooth be removed before these specks have become soft, the tooth, now within the reach of the usual cleansing processes, will remain sound for life; but if the dark specks have become soft, it is better to remove and cleanse them, and plug the teeth in the usual way. It cannot then be too generally known that teeth, which would be lost

from lateral pressure, saving where difficulties insuperable from situation or shape present themselves, may be preserved in the manner described under the head of stopping teeth.

SECTION IV.

Secondary, or Accidental Causes of Decay.

HAVING already examined the two primary causes of decay in teeth, the first proceeding more especially from the Shape of the grinders, and the second from Lateral Pressure of all the teeth of a set against each other, it remains to attempt some description of the proposed third, or remaining class of diseases. Caries in all its other varied forms proceeds almost entirely from want of cleanliness, the prevention and rectifying of which is nearly altogether within the control and management of man*.

* Where the teeth are kept literally clean, no disease will ever be perceptible. Their structure will stand the changes of climate, the variations of diet, and even the diseases to which the other parts of the body may be subject from constitutional causes.—L. S. PARMLY.

It may not be out of place here to remark that the bony substance* of teeth, although, next to their enamel, the hardest in the animal economy, is particularly liable to decay when subjected to the vicissitudes of moist and dry, cold and heat, independently even of the chemical changes that necessarily take place in the mouth. The gastric juice is known to act on any dead bodies subjected to its influence, and by separating their component parts, changes their very nature, and prepares them to return the more readily to their original elements. The juices of the mouth, influenced

* Every tooth may be divided into two parts; its body, or that part which appears above the gums, and its fangs or root, which is fixed in the socket. The boundary between these two, close to the edge of the gum, where there is usually a small circular depression, is called the neck of the tooth. Every tooth is composed of its *cortex* or enamel, and its internal bony substance. The enamel, or as it is sometimes called, the vitreous part of the tooth, is a very hard and compact substance, of a white colour, and peculiar to the teeth. It is found only upon the body of the tooth, covering the outside of the bony or internal substance. When broken, it appears fibrous or striated, and all the striæ are directed from the circumference to the centre of the tooth. This enamel is thickest on the grinding surface, and on the cutting edges or points of the teeth, becoming gradually thinner as it approaches the neck, where it terminates insensibly.—Hooper's Medical Dictionary.

perpetually by the state of the stomach, in like manner affect the teeth, which, in reference to external agency, may not inaptly be considered in the light of a dead substance.

All acids occasion injury to the teeth, in so far as they dissolve and separate the component parts of their enamel. This is the only plausible reason hitherto offered for that peculiar decay called denudation*.

In eating fruit, a certain and well known sensation in the teeth calls attention to the chemical influence of even the small portion of acid it contains. In many instances, when we are unconscious of the cause, other and similar bad effects are produced. In chewing hard substances, as when a stone concealed in food is forcibly bit, a thrilling sensation is produced, which gradually wears off; but which, in some instances, leaves indelible injury behind; per-

* Denudation, (an unaccountable, but clean wasting of teeth, on parts not subject to friction,) appears to be connected with some cause, which may produce a solution of the enamel: it is very possible that the saliva may have some influence, and that the friction of the lips may contribute to the removal of the enamel.—Fox.

The cause of this disease is simply a want of the proper manage-

haps the enamel has been cracked or splintered, when the tooth will become the victim of the class of diseases first described; or a piece of the tooth may have separated, leaving the bony substance exposed; or the lining membrane of the socket may have been so much injured as to become inflamed and disunited. The tooth thus deprived of the lining membrane of its socket, the natural medium of union between the teeth and jaws, becomes in a manner dead, as its altered colour and looseness will readily indicate, when its substance, and that of the socket itself, are speedily reduced to their elements, and received by absorption into the general circulation of fluids in the body. The same thing frequently occurs to the front teeth, when struck a violent blow. They often remain for years in the head, but dead, and discoloured.

Clammy and gummy substances, as sugar,

ment in cleaning the teeth, from an early period of life; and also the too frequent use of the daily advertised nostrums for the teeth and gums, which very generally contain some deleterious ingredient. They are used under various forms, such as tooth-pastes, electuaries, tooth-powders, for bleaching the teeth white, &c.—Sigmond.

although innocent in themselves, frequently injure the teeth by their adhesiveness, and the readiness with which they seize on and retain acids and other injurious substances. Discoloured specks, even in their more prominent parts, may be produced in this way ; for if you wash a living tooth with strong acid, it will whiten at the time, but become discoloured for ever after.

The teeth are formed in pairs that correspond with one another, as the right hand with the left. If a line, indentation, or mark, be found in one tooth, a similar peculiarity may reasonably be looked for in its fellow, in the other side of the same jaw*. This, as well as the space between the teeth and gums, round their whole necks, retains food and moisture, which not unfrequently occasions the loss of the double teeth of the most pains-taking persons, in those parts of the mouth where the influence of the

* This decay of the teeth does not seem to be so entirely the effect of accident as might be imagined; for it sometimes takes place in them by pairs, in which case we may suppose it owing to an original cause coming into action at its stated time, the corresponding teeth being in pairs, with respect to the disease, as well as to situation, shape, &c.—John Hunter.

brush cannot be rendered efficient. In such cases the decay takes place in the necks of the teeth next the cheeks, their interior sides being saved by the brushing and cleansing influence of the tongue. We accordingly find that decay frequently takes place there from the decomposition of the enamel, occasioned by impurity, and more particularly at the part where it gradually terminates in the neck of the tooth*. Disease often originates between the teeth, from this cause, especially when tartar has so much accumulated as to force the gums away from the teeth, or when perhaps the improper use of a tooth-pick has effected the same thing.

In many persons the surfaces of the front teeth are marked by indentations, not common to that class of teeth, but characteristic only of those of the individual; in which case they

* It appears, by minute observation, that their premature loss or decay cannot arise from any defect of original organization, but it is to be ascribed solely to the action of impure matter, the result of uncleanliness, on a part incapable of freeing itself from extraneous accretions, as in the other parts of the living body; and to supply this want of natural power, the interference of art appears indispensable.—L. S. Parmly.

form an exception to a general law of nature, and become liable to caries from their shape, as already explained; but a gold plug, where other precautions fail, is ever an effective check to the further progress of decay. In the under front teeth, such lines are rarely, if ever found, and they accordingly seldom become carious from foulness alone.

In the third class of diseases of the teeth, perhaps the most prominent cause of their loss is tartar*.

This deposit appears to be of two kinds—the first and most pernicious, although less in quantity, is the greenish, thin substance, which attaches itself to the anterior surfaces of front teeth. It eats granularly into the enamel, and when permitted long to remain, arrives at the bony substance, which gradually becomes dark and soft, so that adhesion of the shattered enamel soon ceases; until at length the upper half, or part

* This is an earthy substance, held in solution by the saliva, and is deposited on the teeth as the saliva undergoes decomposition. The formation of tartar is much influenced by the state of the health.—Fox.

of the body of the tooth next the gum, is totally decayed, while the remaining half, towards the cutting edge, is perfectly sound.

To this species of attack the shedding teeth, from the neglect so natural to children, are peculiarly liable, as well as the permanent ones*. Tartar, increasing with time, insinuates itself between the gums and teeth, occasioning their complete separation, until it arrives at the sockets or cells in which teeth are fixed†. These last are singularly susceptible of change, with every affection of the teeth, on whose presence they altogether depend, appearing in infancy with their growth, and again disappearing by absorption so

* There is another kind of tartar, which collects chiefly about the teeth of young persons; it corrodes the enamel, and disposes the teeth to be carious.—Fox.

† When it has increased so much as to touch the gum, it produces ulceration of that part, and a train of bad consequences. The gums, receding from this matter, become very tender, and subject to hemorrhage.—John Hunter.

The use of mercury is no uncommon cause of premature loss of the teeth, by inducing absorption of the alveolar processes.—G. Fox.

The disease which is erroneously termed Scurvy, is in fact a local disease, arising from uncleanliness of the teeth. This state of the gums is remedied by bleeding them, and by removing all extraneous matter from the teeth—Jos. Murphy.

soon as the teeth have ceased to exist. This accounts for the great change effected on the face of a toothless person. Not only is the length of the face diminished by that part of teeth that protrudes from the gums, but their roots also, making in all about an inch and a half. This state of affairs, perhaps it may be called calamity, produces in faces that were naturally well formed the appearance of a projecting chin. In ordinary cases of projecting chin, if the teeth were lengthened, or the mouth held to a certain extent open, the peculiarity of a projecting chin, or being under hung, would appear to be corrected.

The slightest continued pressure on any part of the sockets causes them to disappear by absorption in that direction, while at the same time they have a disposition to filling up with bony matter behind, particularly in early life. To this provision of nature the front teeth very frequently owe their preservation from lateral pressure, by sliding aside, when they cannot rise easily in the dental circle; and the cutting edges of the upper and lower teeth shut into one another with the nicety and precision of a mortise.

At this stage of absorption, whether it arise from the accumulation of foreign accretion, or an undue friction, pain is often experienced, when the tooth, although without a flaw, is condemned to extraction. This disease is sometimes to be met with in the mouths of the most careful and cleanly persons. During the growth of such tartar, the gums become affected, continued excitement renders them inflamed, the vessels are swollen, and discharge blood on every touch of a brush or any thing else. Tartar, when it has greatly accumulated, as well as any undue lateral pressure of the front teeth of the one jaw on the other, every time the mouth is shut, after the loss of the double ones, frequently induces suppuration in the membrane which lines the sockets, which will last for years, until the parts are completely absorbed. All these evils may at first be easily prevented, and greatly mitigated at any period of their existence*.

There is another species of tartar, softer in its nature, and deposited in much larger quantities. In some constitutions it accumulates as

* See Treatment of the Gums.

much in a week, as in others during one or more years, but the instances are rare where it does not at all deposit itself on the teeth. In general it collects the most where the parts are beyond the range of the brushing influence of the tongue, and at the parts not acted on by the grinding of food. From the situation of the front under teeth, and the stooping-forward inclination of the head, tartar collects around their necks in greater quantity, and even when it grows no where else besides. That part naturally forms, as it were, the well of the mouth, where, if any deposit exist, it must be found. During illness, when mastication is discontinued, tartar sometimes envelopes all the teeth, so as to exhibit the appearance of one unbroken substance of bone.

This tartar is soft at first, but continues to increase in quantity and hardness, not unlike the crust that forms in vessels where the London water is boiled. The quantity is sometimes so great as to impede speech, by forcing the tongue backwards in the mouth, as if a marble were fastened under it. So powerful is the cementing principle of the saliva with its deposit in

the mouth, and so rapid in setting, that the softest tartar, if effectually protected from moisture, or when removed with an instrument, becomes quite hard in a few minutes; so much so as to require some pains to remove it from an instrument. Hence the propriety, if not absolute necessity, of cleaning the teeth both night and morning.

It is unnecessary to mention that this concretion, so far as it goes, always forces the gum away from the teeth, appearing to lengthen them, while in reality they are only deprived of their sockets, the gums of course retiring with the bone. Teeth thus situated inevitably loosen, and keep the gums in an inflamed state, in which the general system often participates. It becomes worst in persons of sedentary habits. All these evils, however, are, by timely care and attention, to be avoided.

In some constitutions the teeth are of a sickly yellow hue*, which pervades their whole struc-

* White teeth, if naturally white, are a sign of great health; that there is a whiteness of the teeth, a dry glossy whiteness, with pale gums, which is a sign of disease. Most of the English teeth are of a darker hue than those of the Africans, and this arises from

ture, and yet the strongest teeth are in appearance but rarely very white; in others they are of a transparent and pure white, the enamel being extremely thin. Such is the appearance which an acid would, for a short time, give to dark healthy teeth, by removing a coat of it, and destroying them for ever*; while in a few, the cementing principle of the enamel is so scanty as readily to admit the disunion of its component parts. These cases, and others that deviate from general principles, are on the whole of trifling importance, in so far as that they occur only from accidental causes, affecting an individual rather than a system, and that in a very limited number of instances. At the same time it is deserving of notice, that if teeth, naturally delicate or defec-

our people's mode of living, indigestion, and visceral diseases being therefore more frequent than amongst the Africans. Now this darkness, or yellowness, arises from the quality of the saliva, and the quality of the saliva varies in proportion to the health or derangement of the digestive organs.—MEDICAL ADVISER.

* Enamel is not reducible to quick lime by fire, till it has first been dissolved in acid.

When a tooth is put into a weak acid, the enamel, to appearance, is not hurt; but on touching it with the fingers it crumbles down into a thick pulp.—HUNTER.

tive in substance, can be carefully nursed through the proper period of the growth and strengthening of the body, they may with continued care be rendered lasting and useful*.

Besides the external and visible diseases in teeth, and the parts adjacent, there are others connected with them which often create much suffering; such as swellings of the sockets, and of the roots, when perhaps a diseased union between them ensues, with gum-boils, and more deeply-seated abscesses, which have probably sometimes been the origin of the horrible malady—Tic Douloureux.

SECTION V.

Of the Gums.

The diseases of the Gums are so intimately connected with the teeth, that in the first edition

* I have frequently seen these marks on both the first and second set of teeth, which causes me to suspect such children have had the small-pox twice.—Dr. Wooffendale.

it was thought unnecessary to attempt any separate description of them. To obviate, if possible, the inconvenience experienced by those who seek for an account of their own particular cases under certain heads, it becomes necessary in some measure to recapitulate much of what has already been said. There is no such disease as scurvy of the gums, except in cases where the whole constitution is affected by it, and yet it is the current denomination for almost all the diseases with which they are usually visited.

A disease of the gums may be local, that is, in the close vicinity of a particular tooth, or fragment of one; or it may be general, or common to all the teeth of one or both jaws. If the disease of the gum be local, and the tooth sound, it will be found encrusted with tartar, which has forced the gum away from the tooth; and acting as a foreign substance on a fleshy sore, has produced inflammation, and a consequently diseased appearance at the part: or if the disease be general in the mouth, the same cause will be found to have produced it. A disease of the gum, however, may be local, and the rest of the mouth in the

enjoyment of perfect health : as, when a carious tooth or stump, from the facility it affords to cold, or other exciting causes, to enter the gums and sockets, has produced inflammation of the lining membrane, with a formation of matter which has burst through the bony socket and gum near the point of the root. In this form, a disease of the gum is called a gum-boil, and may speedily be made to cease by the removal of the offender. It may, however, after a little time exhaust itself, and cease altogether, when the tooth or root, which was the exciting cause, will remain as a dead body in the jaw ; sometimes harmless, and at times occasioning returns of gum-boils, swelled face, accompanied by pain all over the same side of the head, and even in the ear, neck, shoulder, &c. A local disease of the gum may also assume the shape of a fungus, which may require the repeated efforts of the most experienced surgeons to eradicate, for it will form again and again, like a corn. It may even assume the form and nature of cancer, unless skilfully treated. Cancer thus generated in the gum, or in the tongue, from continued irritation occasioned by a pointed

broken tooth, is not an absolutely uncommon cause of death.

Abscesses of a more serious nature, and diseases in the bones of the face, are often occasioned by diseased teeth, which appear to the patient to be merely diseases of the gums. So far, then, diseases of the gums seem to be altogether produced by diseased teeth, and therefore properly enough described along with the diseases of the teeth.

In some rare instances, diseases commence at the roots of teeth apparently sound, for which there can be no proper remedy but the radical one of extraction: but in general, diseases of the gums may be altogether prevented by keeping the teeth clean. The cleanliness here meant is not that appearance of the teeth in front which most persons now feel a desire to possess, but an absolute absence of all foreign accretions; whether of a very hard kind, concealed, or nearly so, under the gum, or, in a soft state, lodging on the gum all round the necks of the teeth, and more especially in the back part of the mouth. This state may be preserved by the skilful use of tooth-

brushes, or restored by scaling instruments, at almost any period; unless the bony socket has been entirely absorbed.

Gums that are healthy are all of one colour, and do not bleed when touched; those that are unhealthy have a reddish rim in contact with the teeth, and bleed readily when touched with the finger, or tooth-brush, or when sucked. This state of the gums may arrive at such a stage as to loosen the teeth. With the exception of gum-boils, funguses, &c. and even these may be much mitigated, severe brushing, and friction of the fingers, will, in almost the worst cases, restore the gums to health in a very few days. Whoever has spongy gums may, if he can stand the pain, fearlessly brush and even scrape severely his gums until they cease to bleed,—the only just criterion of restored health.

The gums, however, may be painful when not diseased, and that in the mouths of the most careful individuals. This happens in general to the front teeth, and from the absence of all or a certain number of the double teeth.

It will readily be understood, how, in absence of the double teeth, an unusual pressure falls on the front or single ones. Every time the mouth is shut, the front teeth of the under jaw, rubbing forcibly against those of the upper, grind down, by attrition, or loosen each other. The proper remedy for this state of affairs is to fill up, by artificial means, the ravages of time, of heedlessness, and tooth-drawing, thereby restoring, in a great degree and in the proper quarter, the usual powers of mastication.

The gums forsake the teeth to a certain extent in the mouths of many careful persons; if all besides be right, this need not annoy them much, as it is only a slight diminution of the bony sockets, the gums retiring, but not wasting. This may be a constitutional defect, or the result of medicines; but in either case is not dangerous nor worthy of exciting any uneasiness.

CHAPTER III.

Preserving the Teeth.

If the decay and loss of teeth be owing chiefly to external agency, it is not unreasonable to infer, that they were intended to last whilst life should require their services*. That this is a legitimate conclusion, may be drawn from the fact, that in numerous instances where in the same jaw teeth were extracted, or gradually decayed from caries, twenty to fifty years before,

* However useful the improvements of Medical Science have been to society, in the alleviation and cure of diseases incident to the mouth and teeth, the preventive means, which Mr. Fox termed the "delightful secret," will, if prosecuted and brought forward, supersede the necessity of every other; since the want of preventive means has been one great cause of human misery, and the only reason why mankind do no longer retain these important organs for masticating their food, and preserving a perfect voice, the functions of which apparatus, constitute, in some degree, a main spring of life.—L. S. Parmly.

the corresponding ones in the other side, which were nearly as bad, but more promptly attended to, and plugged, still remain sound and serviceable.

We now proceed to review the leading features and treatment of the teeth, from infancy to old age.

SECTION I.

*Shedding Teeth**.

The shedding teeth, of which the proper complement is twenty, usually begin to cease their

* Mankind is furnished with two sets of teeth: the first are called temporary, or milk teeth, their existence being limited to the age of infancy: they are twenty in number, and of three kinds (classes), viz. Incisors, Cuspidati, and Molares. There are in each jaw four incisors, two cuspidati, and four molares. These are shed, and are succeeded by the second set, which are called adult or permanent teeth. When these are completed they are thirty-two in number, sixteen in each jaw, and are of four kinds, viz.: Incisors, Cuspidati, Bicuspides, and Molares. Those of the upper and under jaw, whose situations correspond, have the same denominations, and their crowns nearly resemble each other in figure. They are arranged as follows: in the front of the upper jaw are four incisors or cutting teeth; next to these are the cuspi-

functions about the age of seven years; when they are succeeded by the second or permanent set, of which the proper number is thirty-two. In the first and second set, the four incisors in front of each jaw, and the eye-teeth, are shaped nearly alike; while the others are very dissimilar.

The first set, which are meant to last but for a short period, unlike the second, commence decaying at the points of their roots. Their decay is carried on by absorption, and so admirably is it contrived, that the general system appears unconscious of what is going on, until the shedding

dati, one on each side; next to the cuspidati are the bicuspides, two on each side; last in order are the molares, three on each side: the third molares are called dentes sapientiæ.

The arrangement of the teeth in the lower jaw is precisely the same as described in the upper, and they bear the same names; but there is some difference in their size and figure. All the incisors have single fangs—they are longer and pointed; the cuspidati have also single fangs—they are longer and thicker than the incisors. The bicuspides have mostly but one fang in the under jaw, and two in the upper. The molares of the upper jaw have generally three fangs, though sometimes four, and even five; those of the under jaw have two, and sometimes three fangs. The dentes sapientæ have commonly two fangs, sometimes they have three, and often only one.—MURPHY

tooth, wasted to the surface of the gum, usually drops out almost of itself, when the head of its more lasting successor appears instead. This latter is at that period also without a root.

A further proof of the intention of nature is here again exhibited: the shedding teeth, with roots as sound and apparently as well adapted for permanency as those of the adult ones, gradually waste away and drop without pain; at every stage of its decay, the remaining portion of root looks clean, and only gnawed away*, while the roots of the permanent teeth never decay, even after their whole body has been eaten away by caries.

The shedding teeth, are, however, equally liable with the permanent ones to be affected by external caries, and for that reason they should be objects of equal care, as on their timely and proper shedding must depend much of the good or ill which will attend their successors; and

* When the teeth are extracted during the process of absorption, they appear as if the fangs were partly broken, or splintered off, but the fangs never exhibit the least appearance of cariosity, even when the crowns are carious.—Jos. Murphy.

although in some instances it may be improper to delay the extraction of a shedding tooth, more mischief has certainly arisen from premature extraction than from cautious delay*.

The first permanent double, or children's wisdom teeth, frequently make their appearance about the age of five years, long before shedding commences: their character is therefore not unfrequently mistaken, and they are permitted to decay, or to be injudiciously extracted. Permanent teeth, when extracted early, are, as already observed, without roots, for the root is the last part of a tooth that is formed†; and shed-

* The indiscriminate practice of drawing children's teeth before they loosen, is erroneous; the intent of making greater room for the second set is thereby directly defeated.—Dr. Hunter, of Dublin.

Considerable importance ought to be attached to the preservation of the temporary teeth during the formation of the permanent ones. At the early periods of the formation of the permanent teeth, the connexion between their rudiments and the temporary teeth still exists, and the structure of the former would be probably injured by the too early destruction of that connexion; in addition to which, the loss of the temporary teeth before the permanent ones are ready to fall into their proper situation in the maxillary arch, has been shewn to lead to the probable contraction of its span, and the subsequent irregularity of the teeth.—Thos. Bell.

† The body of the tooth is formed first; afterwards the enamel and fangs are added to it.—John Hunter.

ding teeth, previous to their dropping out, are without roots, for they have been absorbed. There is, however, a wide difference in the appearance, as well of the body as of the roots of imperfect teeth of the first and second set, but it requires a somewhat practised eye to discern that difference.

In accounting for permanent teeth having been mistaken, before their roots were formed, for shedding ones; it is observable that they have been sometimes removed by the awkward extraction of an adjoining tooth; and as they were without roots, the parties contented themselves with the belief that the accident only anticipated a law of nature. It sometimes happens that one of them becomes so carious and painful as to render its removal necessary. In which case, if the corresponding tooth be permitted to remain, a proportionate diminution of the jaw, in the side from which the tooth was extracted, will ensue, and a deformity to that extent may be traced in the adult face. In such a case both sides of the jaw will ultimately appear to be equally filled with teeth; while the side of the dental circle, or horizontal arch, from which the tooth has been

extracted, is in reality more diminutive than the other. If the extracted tooth be from the upper jaw, it may cause the teeth of that side to shut within those of the under jaw; or, if they do shut properly, being fewer in number, and their roots confined to the segment of a smaller circle than the corresponding ones in the opposite side, they are forced unnaturally asunder, and outwards, and thereby destroy the beauty so remarkable in well set teeth. If the corresponding tooth in the other side be also removed, all the upper ones may shut inside the under, and produce a projecting chin. In the same manner, if the extracted teeth be from the under jaw, it may be diminished to such an extent as to present the appearance of a very protruding upper lip and jaw.

That the first teeth are to be shed, is frequently made an argument for leaving them to their fate*; in consequence of which, children, like their seniors, often suffer severely from the tooth-ache: or, if unfortunately any thing was

* A gentleman has just paid me a visit, who has been my patient since the age of eight. During one of his vacations, I saw some incipient disease, and stopped it; twenty years have elapsed, yet I

done for them, it was extraction, than which, nine times in ten at least, nothing could possibly be more injudicious, cruel, or even wicked. It is a common operation to clear at one fell swoop all the shedding teeth in a mouth, while the first permanent grinders are at the same time permitted to decay from their shape. A mouth thus cleared looks clean, and is calculated to please parents that know no better; but experience will inform them that the second teeth do not come so early as was expected after the extraction of the shedding ones; for the process of absorption of the roots of the first teeth seems to open the way for the easier advance of their successors. Besides, young persons are thus often prematurely deprived of the use of their masticatory apparatus, to the detriment of their general health.

In treating of the shedding teeth, another remarkable feature in their economy occurs. Although decomposition of their substance is for a

found the same old stopping which I had inserted, in one of the large first double upper permanent teeth, and also in one of the large under double teeth. I have no hesitation in affirming this to be one of the most important and useful operations that can be performed.—SIGMOND.

long time in progress, even up to the total waste and loss of their roots, when they only continue to adhere to the gums; unlike permanent teeth, that are in a state of decay, and unlike themselves when permitted to decay in their visible parts, or crowns, they still continue free from pain, and may be used in mastication to the last. By all this nature seems to indicate that the shedding teeth ought to be permitted to perform their functions up to the time at least of the appearance of their successors.

To some it has appeared irreconcileable with reason that the early removal of first teeth should occasion a crowded state of the second; while, in a naturally crowded jaw the removal of one or more of the second teeth should give room to the rest. In the first case, the jaw is still in a growing state, and will close over the space vacated by a tooth, as the bark of a growing tree will close over a wound. In like manner it is that a second tooth, unless space is kept open for it by the first, can scarcely ever rise fairly in the dental circle. The general practice, in reality, is to remove two teeth to make room

for one, as if every shedding tooth were not to have a successor.

Cleanliness alone, if attended to from the first, would preserve the crown of a child's tooth, the decay of which neither hastens nor retards the coming of the second set; while in many instances, a little lead forced into it in the usual way, would preserve it from pain and tenderness to the last. It sometimes happens to shedding as to permanent teeth, that the operation of plomming cannot be endured, from the pain occasioned by it. The author first removes the tenderness by the use of his anodyne, and thereby invariably succeeds in preserving children's teeth to the proper period of shedding them.

Instances sometimes occur where all the first teeth are not shed, and the second set do not make their appearance: this circumstance calls for delay in removing the first ones*, especially as, from the accommodating nature of their

* The permanent single teeth appeared, in the first instance, irregular, and projecting more beyond the dental circle than the bicuspides, but within the period of twelve months, they fell into their proper place.—BLAKE.

sockets, almost any irregularity by a process of nature, or should occasion require, by simple mechanical contrivances, may be corrected up to the age of twelve to fifteen years. In general, however, the shedding teeth drop of their own accord at the proper time; or they are loosened and removed by the restlessness so natural to children.

SECTION II.

Cleaning the Teeth.

It has been shown that foulness of the teeth will breed diseases of the gums and sockets. All fair means therefore ought to be pursued, and a simple and reasonable plan adopted for keeping them clean. In order to do this effectually, it may be proper to bear in mind that the teeth are like beautiful pieces of ivory, with a highly polished glassy surface, so far at least as they are seen out of the gums; and that the same means would keep them clean as are daily resorted to

for cleaning common ivory*, with this great advantage that their substance is of a much harder quality, and consequently less liable to injury from the mechanical friction of powders, &c.

The wet corner of a towel wrapped about the finger, so far as it went, would clean them tolerably well; and if a little prepared chalk, common whiting, or charcoal were to be added, the ivory would look the more clear and polished for the operation. But as the teeth, from their situation, are much in the same state as chased or carved work, inaccessible to the finger at some points, a tooth-brush will be found materially to aid the process, although it may not prove quite successful at every part of them.

When the tartar or deposit around the teeth acquires consistency, scaling instruments are requisite to scrape it off; and although many persons object to this operation, it may be safely and repeatedly performed in the course of every

* If the constant use of a tooth-brush and water be not sufficient to keep the teeth perfectly clean, a tooth-powder may be used, composed of some substance not possessing any chemical property which can act upon the enamel, or of too hard a quality, by which it would grind it away.—Fox.

year, during a long life. Another advantage, besides the preservation of the gums and sockets, accrues from this practice, namely, that at periodical examinations of the teeth the first commencement of disease is detected and checked. Attention may here be called to the fact that the crowns of teeth are covered with a flinty substance, that admits of being scraped and polished; while the remaining portion, or their necks and roots, are covered only with a skinny substance, periosteum, or lining membrane, as it is called, of the socket. It is obvious, then, that the same process that polishes and improves the one may utterly destroy the other. This may sometimes account for denudation of the fangs, or forsaking of the gums. Let it never be forgotten, however, that undisturbed tartar more frequently and more certainly produces this effect. Once denuded of the periosteum or membrane, here meant, the exposed fangs must be kept very clean, or they soon absorb external moisture, become discoloured, and affected by disease.

The prejudice advanced against scaling the

teeth, owes its existence chiefly to the improper modes adopted by some operators, who, through ignorance or carelessness, not only fracture the enamel, but apply an acid under the disguise of a dentifrice, which dissolves it together with the tartar*. The surfaces of the teeth when perfectly clean, and free from foreign accretions, have an even, smooth surface, and consequently oppose no resistance to the easy play of sharp scaling instruments at any part of them. This is the state in which well-regulated teeth ought always to be kept. The gums then adhere firmly to their necks. Let it here also again be impressed on the mind of the reader that even the most unhealthy gums, if the teeth are sound, may, by severe brushing only, in a very few days be perfectly recovered.

This practice, for the cure of spongy gums, is superior to lancing, in so far as it is in the power

* All acids, gritty powders, and injudicious methods of scaling the teeth, are prejudicial; but simply scaling the teeth, that is, clearing them of the stony concretions which frequently collect about their necks, while nothing is scraped off but that adventitious substance, is proper and useful.—HUNTER.

of the patient to continue it daily until a cure is effected. When the gums become too tender for the tooth-brush, the finger and thumb ought to be employed repeatedly during the day, to press out blood or matter, when either is in excess, until they attain a perfectly healthy and comfortable state.

Of Lotions, it may be remarked generally, that they are intended to stimulate the parts when languid to a new and more healthy action. The groundwork of all lotions for the mouth is spirit of wine, modified by various admixtures* : nothing however appears superior to the spirit itself, which may be sufficiently diluted by pouring a few drops on the tooth-brush when wet.

* ELIXIR FOR THE MOUTH.

Anti-septic Balsamic.—No. 1.

R. Alcohol of guaicum, two ounces.
Alcohol of compound lavender, one ounce.
Tincture of alcoholized cinnamon, } of each two drachms.
Tincture of myrrh and of aloes, }
Essence of the London mint, } of each four drops.
Peruvian balsam, }
Mixed.

J. C. JERBAUX.

As to the degree of hardness requisite for a tooth-brush, it may be observed, that a hard one will soonest cure tender gums; but, as the process may be painful, a soft one can be used until the gums gradually become prepared to endure the other.

When the gums are sufficiently healthy they do not readily bleed, and for them, then, that sort of brush may be used which is most agreeable.

It is desirable that all mystery should be removed from the management of the teeth, and that society would look upon them as mere specimens of art, so far as regards their cleanliness, and the mode of effecting it; for their vital functions, like those of the general system, are, fortunately for us, attended to by a principle that never neglects them.

As the composition of tooth-powders should be no secret to those who use them, they ought to know, that powders mixed with acids act chymically and decompose the enamel, and consequently subject the teeth to early decay; and that gritty powders act mechanically, and waste

them. Charcoal, Bole*, and many other substances, may be used with safety for their antiseptic qualities; but those that are of a dark hue often enter into the vessels of the gums, and change their colour, without any adequate advantage†.

A safe medium may be found in prepared chalk,

* Armenian Bole forms, like all argillaceous earths, a good tooth-powder, when mixed with some aromatic.—Dr. Hooper.

†TOOTH-POWDER.

Good tooth-powder may be composed of very fine bark, in powder, of the best quality, charcoal, alum, cachos, armenian bole, cinnamon, cochlearia, &c. either separately or compounded.

J. C. Jerbaux.

Qualities of Tooth-Powders.

Soot acts by mechanical friction, but not superior to any bitter powder, as bark, &c.—Charcoal acts mechanically by its friction: burnt crust the same.—Gunpowder produces no effect but through the charcoal and nitre it contains.—Alum is a most mischievous application to the teeth, being the produce of oil of vitriol and clay. It is a very strong styptic; but on coming in contact with the teeth it is immediately decomposed, the acid uniting with the teeth.—Salt, perfectly innocent, although not serviceable.—Nitre, or saltpetre, a valuable application to inflamed gums, removing the rough, viscid slime, which, in some, collect over the teeth and mouth; it is a useful gargle, and does not act on the teeth.—Cream of Tartar: improper; acts on the enamel.

Mixtures of soot, salt, soap, &c. &c. remarkable only for their nauseous qualities.

J. Fuller.

or the moderate use of powdered cuttle-fish, as often as it may be required; but in general, a good tooth-brush, well applied with clean water, will be found to answer almost every purpose.

The practitioner will meet with persons who say that they bestow much pains daily in cleaning their teeth, but whose gums are nevertheless unhealthy, and whose teeth are dirty; and who consequently instance their own cases at least as exceptions from the above rule. To such a very few words in reply will be sufficient: they do not apply the tooth-brush successfully to every part of their gums and teeth; as a proof of which, on examining the matter a little further, they shall find that the more prominent parts of their teeth, which alone their efforts have reached, are sufficiently clean, and the more prominent parts of their gums healthy.

This is a point in the management of teeth on which not a few deceive themselves. Many persons shall habitually apply the tooth-brush to their teeth after every meal, without success; like the abortive, however industrious efforts of a child to wash clean its face. In the latter

case, the eyes and natural hollows remain untouched by the cleansing element; while in the former, the particles of food decomposing in the intricate cranies and corners of the teeth and gums remain undisturbed, until subjected to the periodical operations of the dentist; except on the grinding surfaces, where the natural process of mastication aids the cleanliness of teeth placed in untoward circumstances. It is a mere matter of taste, whether persons shall clean their teeth three times or only once a day; the whole mystery of the art being contained in the success with which the operation is performed.

SECTION III.

Of Plugging, variously called Stopping, Plomming, and Loading Teeth.

It has already been shown that the human teeth are subject to almost inevitable decay from three causes, viz. their Shape, Pressure against each other, and Uncleanliness. It now remains

to be explained how, where either or all of these causes operate, and where cleanliness alone, from the shape and situation of the teeth, would fail, other processes come in favourably for their preservation.

Of these, Plugging Carious Teeth, and thereby stopping* the further progress of decay, takes the foremost place. This operation is variously performed, and appears to have been amongst the first undertaken by those persons who assumed the name of dentist. The author himself had lately an opportunity of curing, and afterwards plugging with gold, a carious and tender tooth, for one of our most celebrated professors of music: a cavity in the other side of which tooth had been success-

* By stopping a tooth it is rendered artificially sound again.—Fox.

The progress of disease is frequently stopped, and the tooth saved, by cleaning away as much as possible of the carious part, and stopping the hollow closely with prepared gold, which excludes the air, and prevents foulness, or the pain and irritation occasioned by food lodging in it.—Murphy.

The commencement and progress of decay is so insensible, that it may exist many years, and even the person himself is often not aware of it till it has penetrated the very centre of the tooth; having reached the cavity, it there commands attention, on account of the severe tooth-ache it occasions.—J. Fuller.

fully stopped with silver thirty-six years before, by the father of the celebrated Talma*. He is also acquainted with the case of a well-known medical man in London, who has a serviceable tooth which had been plugged forty-seven years ago.

To understand what is here meant by plugging, it is only necessary to refer to a leak; it may be permanently or temporarily stopped. If a plug be introduced without the complete removal of the rotten portion of the plank, the rot will still go on; but if the entire disease be removed, and its place supplied with a healthy substitute, that part may prove the most lasting of the entire vessel. In like manner the affected portion of a tooth must be completely removed, and its place supplied with a plug that shall be harmless and lasting, while it can never be

* In 1783, applied to me, James Russel, Esq. On examining his mouth, I discovered a considerable decay in one of his large double under teeth, on the outside of the crown, or near the gums; and after relieving it by brushing with a lotion, and cleansing out the cavity, I stopped it with tinfoil. Mr. Russel lately informed me that the same stopping and tooth remain perfect and firm to this day, (1825).—SIGMOND.

reached by the influence of external air or moisture. In this way the bony substance of teeth may be preserved to an indefinite period.

The substances most commonly used for stopping are gold, tin, and lead in leaf*. The manner

* Materials for Stopping Teeth.—Various materials and metals have been proposed for stopping the teeth, all of which are more or less objectionable. Lead, tin, and silver, are frequently employed for this purpose, but they are all destitute of the properties indispensible to sueeess, in the performance of the operation. Any of these metals will protect the cavity from caries, for a short period only. They will all soon corrode, and then become more injurious than the original disease; and in every ease will ultimately prove the cause of destruction to the tooth, which might have been preserved by proper treatment. Although platina is a more suitable metal than any one of those above mentioned, yet, in consequenee of the neeessity of amalgamating some other metal with it, to render it malleable, it is by this adulteration rendered insuffieient for the purpose. It is never accompanied by that eleanly and bright appearance, so desirable for teeth that have been stopped; but it is produetive of a dingy opacity of the tooth's surface, which is apt to mislead the dentist at a future period into an idea of its being again under the influenee of caries, and is therefore also objectionable.

Even gold, the only proper substanee for this operation, as it is often prepared for the dentists, though free from copper, is not unfrequently alloyed with silver, which renders it harder, and in some measure liable to corrode, and is, therefore, in this state to be rejected*.

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* In India, teeth are often stopped with pure gold, which is not malleable, and consequently not fit for that or any other purpose.

of performing it is to introduce the foil gradually with a blunt-pointed instrument, called a stopper,

Fusible Metal.

A composition used by some in this country, and generally in France, consisting of bismuth, 8 parts; lead, 5 parts; and tin 3 parts, soluble at a heat of boiling water, and called fusible metal. In the first place, this metallic compound is as liable to corrode as either lead or tin, and possesses all the other noxious chemical qualities of both.

Secondly, the metal introduced into this cavity at the temperature of boiling water, will not only destroy the vitality of the living fibres, but also the whole surface of the healthy bone, and thereby produce some dead bony substance and caries, the very disease intended to be cured by it, which will inevitably destroy the teeth.

Thirdly, the irritation of the hot metal subjects the living membrane of the tooth to inflammation, and destroys the vitality of the tooth.

A fourth objection is, that the metal being poured into the cavity in its liquid and expanded state, will contract as it cools; and consequently, instead of being a perfect filling up, it leaves interstices for the reception of foreign matter, which will destroy the tooth more quickly than if the cavity had not been stopped at all.

There are, however, other remedies also of equal efficacy, if judiciously applied; such as filing and cutting, or a complete re-

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Virgin or pure gold is denominated 24 carats. Of these, divided into as many parts, one, at least, must be of silver, to render it malleable and fit for dentist leaf. The patient need not, however, be greatly alarmed on this account, when he reflects that guinea-gold, or British standard, consists of two parts alloy, silver and copper; and that the gold used by jewellers has six parts alloy.

into the carious cavity, having previously cleansed out the caries. When the cavity is full the foil is pressed into almost a solid state, by the continuous and forcible application of instruments,

moval of the diseased parts of the bony structure by the file, or other suitable cutting instrument, so as to produce a regular and plain sound surface of the tooth, by which health is preserved.

To remove every local existing cause of inflammation, especially every disease of the mouth that might be considered the principal exciting cause of the local maladies of the teeth, should be deemed as the next essential and indispensable duty devolving upon the dentist, before he could properly undertake the operation of plugging the affected tooth.

When the parts in immediate connexion with the teeth are in any way morbidly affected, they should be previously restored to their healthy action.

A tooth which has been deprived of its vitality by the destruction of its nerve, acts upon the parts with which it is in immediate contact, as a dead and foreign body, and causes an irritation with which the whole constitution sympathizes. In the beginning the suppuration at the root of a tooth exists in the fasciculus of the nerve, and extends afterwards to the cord. The progress of the disease opens a way for the discharge of the matter through the canal of the root.

If, therefore, a tooth which has been treated after the above plan, be filled up with metal, the natural opening for the discharge of the matter is thereby obstructed, and the pus being confined and accumulated, works its way through the side of the socket, and produces a fistulous opening, by which the morbid effects of such a tooth are rendered much more extensive and complicated than the dead tooth that has been left to itself.—KOECKER.

and is thus calculated perfectly to exclude atmospheric air and moisture.

Lead and tin, when put into situations beyond the reach of friction in mastication, as between two teeth, are apt to be decomposed by the fluids of the mouth, in the same way as the teeth themselves decay. But gold being indestructible, will remain useful and permanent, providing it is so applied as that no external moisture or air can penetrate the tooth.

Platina is said to be equally effective; but it is better to adhere to gold only, the supplies of which can be more regularly depended on.

Many cases, however, occur where gold would prove insufficient. The cavity to be stopped may be deep and irregular; and gold, although soft and pliant at first, soon becomes so hard and immalleable by the pressure of the instruments, that no force which it is safe to apply can thrust it perfectly home. If the slightest vacuum remain, there will air and moisture obtain admission, and occasion a renewal of the caries. This is easily avoided by first introducing tin or lead, which from their natural pliancy may be forced into the irregula-

rities of the cavity in a tooth. Over this, gold-stopping may be introduced as a finish, which will effectually prevent oxidation of the tin foil, and thereby save the tooth.

Fusible metal is also used very much in France for stopping teeth, and a good deal in this country: it requires but little chymical knowledge, however, to understand that this must ever be a very inefficient plug for teeth; insomuch as metals in a fused state always expand, contracting as they cool, and thereby freely admitting external air and moisture. So far at least as regards the plugging of teeth, the truth of this will sooner or later become manifest to the patient, however he may at first have been duped by so specious an operation.

It is but justice to state that our first London dentists, aware of the deceitful and injurious tendency of fusible metals, never condescended to have recourse to them, when in many cases they could have applied them with every appearance of success.

Another substance for plugging teeth has lately crept into use, and is daily advertised as superior to gold or any other material. It is,

however, infinitely injurious, and consists of an amalgamation of mercury with other metals. It is applied in a liquid state, and gradually acquires that species of consistence and appearance which characterizes the refuse of smelted ores.

Individuals in the profession have used the mercurial amalgam for years; but, unfortunately for the public and the reputation of those individuals, they have lately begun to call it a cement; in consequence, it is presumed, of the success which has attended the operations of the author, by the use of a *bonâ fide* cement for the cure of tooth-ache, and for cleansing the caries of tender teeth previously to their being permanently stopped with gold. Teeth stopped with the mercurial amalgam, misnamed cement, although they may in some instances for a time escape aching, they never for a day cease to decay. This is soon perceptible from the discolouration produced by the oxidation of the mercury, not to mention its other pernicious properties.

The first class of diseases in teeth, arising from their shape, is the most easily remedied by a plug; for, in the grinding surfaces and sides of the double

teeth, it is only necessary to drill and cut out the affected line or speck, and plug it at once with gold ; but when the decay has originated in the side of a tooth from lateral pressure, the operation is more difficult. If the caries be between two teeth an opening must be effected between them, either by the removal of one of them, or by other means ; cutting out a space to admit of using stopping instruments, and otherwise adapting the cavity thus made for securely retaining the plug.

The operator is sometimes interrupted in effecting an opening between two teeth, by the objections of the patient, who insists on the injurious tendency of filing. This is indeed to die for the fear of death ; as the uneven and broken surface of a carious tooth is thereby made even, and less capable of retaining moisture, the principle of decay ; and which operation alone is the means of saving many teeth. Added to which, even in the worst of cases, the smooth polished surface of the gold, or other plug, is in perfect contact with the enamel at every part of the cavity it fills, and thereby gives to such tooth a chance of safety, which, if left to

itself, must soon have broken entirely down, as is common in such cases.

When the lateral decay is between two front teeth in the upper jaw, their form generally makes it difficult to effect such a cavity as can be made to contain a perfect plug; especially as it is necessary first sufficiently to separate them. The general practice in this case is to file and cut the carious part entirely away, and that, for the sake of appearance, more from the inside than from the outside. It often happens, however, that the teeth are thereby ultimately lost, especially if the operation has been performed before the bony substance could acquire the hardness that is natural to a maturer age, and if the parties have not attained the art of keeping them perfectly clean.

Their preservation under such circumstances, however, is not uncommon. The daily application of diluted spirits of wine will materially aid in the preservation of teeth that have been cut up. But as rinsing the mouth with the mixture will not alone be of much service to teeth, it may reasonably be inferred that

the friction of the brush on the part is more effective than the lotion; due allowance, however, being made for the qualities possessed by spirits for preserving animal substances.

When the caries is between two teeth, or at their necks, it is often impossible for the patient to endure the pain occasioned in cutting it out, or even the touching of the parts by an instrument. In consequence of this many teeth are lost which might be saved, were any substance applied to them which should have the effect of hardening the parts and deadening their sensibility. This is effected by the *Anodyne Cement used by the author of this work for the cure of tooth-ache.*

Spirit of wine hardens the substance of teeth, and in time deadens the sensibility even of those that are tender from filing, &c. If a little quickly drying spirit varnish be used in addition, and, with cotton wool permitted to remain, it will be found to accelerate so desirable an object. Let it then be impressed on the reader's mind, that if a carious tooth be thoroughly cleansed and afterwards effectually plugged with gold, it will last during the remainder of life.

In the early stages of decay the remedies are easy and obvious; but when the disease has been allowed to advance, the practitioner is, in a majority of cases, unable to proceed. The patient can neither endure the cutting of the bone, nor the pressure of the instruments used in stopping. In all such instances the use of the Anodyne Cement not only allays pain, but renders the bone callous, so as on one or more applications to make a case of advanced decay equally manageable with one taken before pain or tenderness had commenced.

Before dismissing the subject of stopping teeth, it is but right to observe that every tooth stopped with metal ought, when finished, to be free from, and unconnected with, any other tooth. Each tooth in a jaw is by nature unconnected with the others. And when a plug is introduced between two teeth so as to unite them, it is a proof of the inability of the operator to perform in a better manner; for he is compelled to trust the permanency of his stopping, to the situation in which it is placed; rather than to the perfection with which it is introduced into each tooth separately.

CHAPTER IV.

Of Tooth-ache, its Cure.—Cases.

THERE is no complaint more general, or distressing in its nature, than tooth-ache; nor one that has excited less attention in the proper quarter. This indifference is, perhaps, owing to the facility with which the cause of this pain may be removed, by the extraction of the affected tooth*;

* The extraction of teeth is an operation which cannot fail justly to create some alarm, when the circumstance attending it are considered. We know that in the hands of the most dexterous operators it has sometimes been attended with serious, nay, even fatal consequences; and therefore it should be avoided whenever in our power, instead of being adopted, as too often happens in the first instance. There is, perhaps, a greater share of manual dexterity necessary in performing it than is generally imagined, to prevent fracturing that portion of the socket where the fang is situated; and if the alveolar process is uncommonly firm, and does not yield to the force of the instrument directed against it, the fracture will extend a considerable way into the jaw, and the effects of it may injure the patient for life. The operation is sometimes followed by a most dangerous hæmorrhage, which in many cases has defied every effort of the most experienced surgeons.—L. S. PARMLY.

and has doubtless been increased by the very prevalent, but unphilosophical notion, that for this malady there can be no other remedy.

Were such pain the only mischief attendant on carious teeth, some consolation might be found in the reflection that with their absence it would cease; and especially as their loss could in a great measure be repaired by artificial means. Constituted as we are, however, the sufferings that many endure, from pain, want of rest, and of nourishment, before extraction is had recourse to, often reduce them to the lowest state of nervous and physical debility; and in many instances, lay the foundation of even more deplorable diseases.

Many affections, which appear unaccountable* to the medical practitioner, are found to proceed from diseased teeth, even when such are not particularly painful; and there are few persons who do not learn, from their own or the experience

* It is much to be regretted that we have not attained any satisfactory practice in the treatment of tooth-ache, and from the nature of circumstances, it is to be feared, never shall.

The influence of carious teeth is often very extensive; not only the face and parts adjacent, particularly the eyes and ears, but the whole head, neck, shoulders, and even the arms, the whole system becomes disordered by want of rest.—FULLER.

of their friends, the torture that the coming of even a single tooth can inflict*; not to mention the ills that are frequently attendant on teething.

It may here be stated that, when a tooth becomes carious from its shape, not only the corresponding one in the other side but the whole class of teeth, and *no more* in the jaw, to which it belongs is liable to be similarly affected: but that, when a tooth becomes carious from lateral pressure, every tooth in the same jaw, from being

* It will be frequently neeessary to lance the gums several times, on account of the extraordinary diffieulty with whieh some cut their teeth.—Dr. Underwood.

Teething is productive of local and constitutional complaints' with local sympathy. The local symptoms are inflammation, heat and swelling of the gums, and an inereased flow of saliva. The constitutional or general consequential symptoms, are fever and universal convulsion, attended by *diarrhœa*, costiveness, loss of appetite, eruptions on the skin, especially on the face and scalp, cough, shortness of breath, with a kind of convulsed respiration, spasms of particular parts, an increased secretion of urine, and sometimes a diminution of that secretion, with a discharge of matter.

As far as my experience has taught me, to cut the gums down to the teeth appears to be the only method of cure. I have performed this operation above ten times upon the same teeth, where the disease had recurred so often, and every time with absolute removal of the symptoms.—John Hunter.

equally subjected to pressure, is necessarily liable to decay from that cause.

Teeth that would decay from *their shape* are easily preserved from pain and caries, if on its first appearance the carious speck be cut out, and its place efficiently supplied with an indestructible plug, as gold, &c.; but when the caries originates between two teeth from *lateral pressure*, it is necessary to make a separation between them, in order to effect an entrance for cleansing instruments and the stopping materials.

At an early stage of lateral decay, its progress is not unfrequently arrested by filing and otherwise cutting out the diseased portion; especially if sound enamel, or only bone remain having a smooth polished surface, and placed within the range of the usual processes of cleansing, &c. These operations may be performed without pain at the time, or being the cause of tenderness thereafter. But if the caries has so far penetrated as that to remove it entirely by filing would destroy the greater part of the tooth, the desired object is attainable by removing only as much as is necessary in more favourable cases, for the introduction of cleaning and stopping in-

struments; by a nice use of which, and the usual process of stopping carious teeth, the further progress of disease is arrested; as described in the first instance of decay from the shape of teeth.

There is scarcely any stage at which caries in teeth can arrive that may not sometimes be successfully stopped with a plug, without pain at the time, or being the cause of it at a future period; and yet there is no stage at which a plug may not be the cause of pain in a carious tooth. It must be confessed, too, that there is not even an apparent stage of caries in a tooth at which, if it be stopped, pain may not return, and occasion its extraction, if the plug be not removed. In a case of this description, if on the approach of tenderness the plug be removed, the cavity cleansed with spirit of wine, and filled with lint frequently dipped in some one of the usual remedies on these occasions*; such ten-

* ELIXIR FOR CARIOUS TEETH.

Antispasmodic Odontalgic.

R. Alcoholized vulnerary water, two ounces.
Liquid laudanum, half an ounce.
Sulphureous ether, two drachms.
Essence of cloves, } of each ten drops.
Essence of London mint, }
Mixed.

J. C. Jerbaux.

derness will often cease, and the diseased tooth after some time, may be successfully re-stopped.

Cases however occur where such teeth when plugged, will never continue well; although, if left open or unplugged, no pain will be experienced. The same rule holds with respect to teeth that decay quite away without pain, as to teeth whose decay is accompanied with pain; whether that pain has ceased gradually through length of time, or has speedily been cured by anodynes.

The pain when it returns, and is occasioned by a plug, commences in some persons almost immediately; while in others it will take days, weeks, and even months. On the removal of the plug, if of any substance but gold, oxidation will be found to have commenced, from the internal moisture and decomposition of the bony substance with which it is in contact, accompanied by the fetor usually proceeding from carious teeth; or a drop of matter or of blood will be found upon it. In some such instances a fine jet of blood issues from the internal vessels of the tooth. Of such cases it may be remarked gene-

rally, that the caries has been of long standing, which, like an old wound, may be dangerous to heal, and of which the large or small size of the decayed portion of the bone is no sure indication; for the teeth of some persons will decay as much in one week as those of others in a year.

Tooth-ache, in most instances, proceeds from inflammation of the nerves* and blood-vessels contained in the tooth; it also proceeds from the lining membrane common to its roots and their sockets†. The inflammatory action, whether

* The nerves are the conductors of all sensation. They have their origin in the medullary substance of the brain, of which, and the spinal marrow, they are formed. A nerve is composed of a number of minute fibrous threads, lying parallel to each other, and is covered by a continuation of the fine membrane which envelops the brain, and invests the inside of the skull.

The nerves are divided into two kinds, those that issue from the brain, and from the spinal marrow. One of the former enters the upper jaw near the dens sapientiæ, and distributes branches to the teeth. Another nerve divides into two branches, one of which enter the lower jaw-bone, and supplies the under teeth with nerves.—Joseph Murphy.

† The periosteum will prove to be a means of only fixing the tooth in the socket, and of preserving the sensibility of the nerve in the cavity of the tooth.—Charles Bell.

The fangs are covered by a thin periosteum or membrane, full of vessels, which also lines the cavity of the socket.—Murphy.

This plentiful supply of vessels must expose the teeth to the

excited by cold or by the contact and pressure of foreign substances, causes an enlargement of the vessels as in other parts of the body, in blood-shot eyes for instance; and which, from their situation in the tooth, as well as extreme sensibility, not finding room to expand, are pressed against the sides of their bony chamber. This pressure, it is presumed, occasions the pain.

When a tooth is much decayed, the nerve, &c. may be seen like a maggot to rise out of their natural channel; but after the inflammation has been reduced by any means, it disappears. Such then is the effect rapidly produced by the Anodyne Cement, and which causes, in most cases, an immediate cessation of pain.

When the cavity containing the nerve, &c. within a tooth has once been exposed, and a diseased action of the vessels has continued so long as to leave no hope of effecting a cure, but by their extinction; the time required for effecting this is almost invariably in proportion to the

same disorders that attack other vascular parts; and such teeth as have the greatest number of vessels, must have the most numerous chances of being seized with these diseases.—Alex. Munro.

volume of these vessels, which corresponds exactly with the shape and size of the tooth. In such cases it were desirable that medical science should lead to the discovery of a principle that should quickly extirpate fleshly substances, or at least their diseases; without, at the same time, acting on the bony substance of teeth.

If the inflammatory action has been long permitted to remain, the tooth, from the casual swelling of the membrane that unites it with its socket, is partially ejected; for it is not fixed there so much like a component and inseparable portion of the jaw, as a ball moving in a socket, and is consequently felt to be longer than the other teeth. Owing to this cause in shutting the mouth, a greater degree of pressure comes on the painful tooth, and the inflammation is thereby increased. A simple remedy for this is to keep the teeth apart by means of a small pad, which may be placed between two teeth in some other part of the mouth. To prevent swallowing the pad while asleep, a strong thread may be fastened to it, whose other end is tied to a button-hole, &c. Those who trust to their peculiar ability of keep-

ing the teeth apart without some such aid, will often find themselves disappointed.

The pain is not always confined to the affected tooth, nor parts in immediate contact with it; but spreads to that whole side of the head and neck, and even to the shoulders and arms, &c. Perhaps this applies more to nervous affections, when the nerves within and around the teeth are the exciting cause. All these gradually subside and disappear as the inflammation is reduced. Occasionally a new tooth will account for the pain just named, in which case a simple lancing of the gums will cure it.

In some persons teeth will totally decay without pain. This may proceed from caution on the part of the patient, or from the blood-vessels decaying more rapidly than the bony substance which protects them; or it may proceed at any period from ossification of the nerves, as in old age.

The Anodyne Cement will, ninety-nine times in a hundred, afford relief from tooth-ache, by one or more applications, however carious the tooth. Even when it is so tender as not to admit of

drying and cleansing out the carious cavity with cotton wool, the cement may be applied, like very soft putty, without occasioning the slightest pain. It soon becomes hard, producing a cessation of torture, as well by its chemical properties as by the mechanical protection it affords in keeping off the exciting causes from the nerves. The tenderest tooth subjected to it will in a few days become so insensible to pain on touch, that the caries may be thoroughly cut out, and the aperture stopped in the usual way, without more uneasiness than accompanies the operation in the first stage of decay*.

If the nerves, &c. in a tooth be so diseased as to emit blood or matter, the Cement will sooth and quiet them, so as to admit of covering them by a plug; but as the matter oozing from the vessels again collects, and becomes stagnant under the plug, it places any such tooth in the same situation as a boil, the pain of which ceases so

* By the beautiful and useful operation of stopping or plugging teeth which are greatly injured by caries, they may be preserved for many years, in most instances, during the remainder of life; and not unfrequently, from ten to twenty teeth may be preserved, by this operation, in the same individual.—Koecker.

soon as its matter has been discharged*. If instead of being plugged with gold, the tooth were to be kept filled with bees' wax, or gum mastic softened in warm water or dissolved in spirit of wine and applied on lint, both to exclude cold and prevent fetid breath, the nerves would gradually die away†; and the remaining portion of the tooth, if always kept clean, or perhaps afterwards stopped, would continue serviceable as well in mastication as in preserving the natural form of the face.

In pivoting or grafting one tooth on the root of another, the nerves are frequently destroyed to a certain extent, by a drill. But the cavity is then, after a day or two, safely plugged by the gold pivot, and no injurious consequence ever ensues.

If in like manner the nerves of the double teeth could be destroyed to a certain extent, it is

* After the lining membrane (nerve is here meant) of the teeth is exposed, it requires a space of time, from one to twelve months, before this membrane is destroyed by chronic inflammation and suppuration. During this time the patient is always subject to the tooth-ache.—KOECKER.

† If repeated inflammations be submitted to, a cure will be performed in time, by the stump becoming totally dead.—HUNTER.

presumed, that a continual healing process would cover the remaining parts with a new skin which should not discharge matter, and that the tooth being quieted and plugged would remain well; but this, from the number of the roots, and the shape of their internal cavities, and the great pain which the operation would occasion, is a matter of so great difficulty as to render it improper to be generally recommended.

The same effect is with almost absolute certainty produced by the application of lunar caustic. This remedy was early recommended by Mr. HUNTER, and followed by Mr. ABERNETHY as a sure cure for tooth-ache. It certainly relieves pain by burning off the inflamed and diseased surface, and perhaps by inducing a new and healthy action of the vessels; but it discolours and destroys the bony substance, and, while any portion of the nerve remains pain will ever be apt to return on the slightest excitation, unless the process be watched, and the tooth plugged.

In teeth where the volume of nerve, &c. is small in substance, as in incisors, eye-teeth, and bicuspides, the cure is generally easy and certain;

but in the large double teeth, where the nervous substance in the crown is great, caustic, unless aided by the actual cautery or a drill, becomes too troublesome to be recommended to general use.

The practice of persons who on some occasions cure tooth-ache by destroying the nerve is, to use caustic in a solid or liquid state, or acids and essential oils, by which the teeth are in general destroyed; but by so slow a process, as not particularly to attract the notice of the patient until perhaps he is nearly toothless.

The Anodyne Cement destroys nothing; it merely removes the sensibility, and enables the operator to cleanse with instruments whatever would be injurious if permitted to remain; and as the teeth generally begin to ache long before their natural cavity is laid open, many teeth may easily be saved, which else, should be extracted, or from their tenderness would be unable to bear the clearing out of the caries and the final operation of plugging with gold.

The Anodyne Cement may be considered as a poultice, which requires to be changed as often as the state of the sore may render it necessary. And this circumstance may in some instances

have led to the various opinions that prevail respecting it.

Incurable teeth, when they occur, are generally found to have their roots highly inflamed, with a fungous growth at their points. This is the first commencement of a gum-boil. The sockets participate in the inflamed action, and if thin and delicate, they are soon absorbed; when the matter formed discharges itself in the manner of a boil, and the tooth becomes easy*. But in some instances the absorbing process is so slow that the most enduring patient becomes too irritable to await its result At every stage of decay previous to this one, the inflammation may be reduced, and suppuration prevented.

In attempting to be thus minute, the author's object is, if possible, to remove the mistakes that the novelty of his practice may have originated.

The following cases will further illustrate the nature and object of his practice:

* Gum-boil arises from a diseased tooth.—When the effects of the disease have extended to the vessels at the point of the fang, and to the periosteum and socket, the circulation being impeded in those parts induces inflammation, and suppuration takes place. —Murphy.

The cases are selected from those of noblemen and gentlemen of distinction and their families; also from those of eminent medical men and dentists, their families, friends, and patients, who, on proper occasions, have been referred to. One dentist* in particular, who was himself instantaneously cured of tooth-ache by the anodyne, and who after three weeks of severe suffering, before submitting to have the aching tooth extracted, would try the "new remedy," merits honourable mention; as from the cases daily submitted to him for extraction, he has never since been known to remove one tooth which, from its appearance, deserved to be preserved; and many persons could be named by this gentleman alone, whose cases would sufficiently establish the advantages of the Anodyne Cement, in every possible stage of caries and tender teeth.

* Mr. Imrie.—Several members of the profession, since the above was written, have begun to follow a plan so creditable to themselves, and honourable towards their patients; and the author here takes an opportunity of thanking those of his brethren who have thus acted, and with whom he is not personally acquainted.

Case 1st.—Of Decay proceeding from Lateral Pressure.—Great pain was experienced for some time between a second small and first large grinder of the under jaw of a Lady. Mr. ———t effected an opening into the diseased parts in the usual way; but in cutting out the caries occasioned so much pain as to be compelled to desist, and directed that spirit of wine should be frequently applied to the teeth on cotton wool, as a palliative. The pain, however, continued to be severely felt, and lasted almost without intermission for three weeks, when the Anodyne Cement was applied, and afforded instant relief. About a fortnight after, having been repeatedly applied during the time, gold stopping was, without pain, introduced in the usual way, The teeth, thus treated, have experienced no return of aching after a lapse of twelve months.

It is but justice to the dentist here referred to, to say that his way appears to be, to go fairly and honestly to the work, whatever may be the consequence. That is, if the tooth cannot be

thoroughly cleansed previous to the introduction of a gold plug, he will not attempt to stop it; and should the patient persist in wishing the operation to be tried, he will first remove the caries, even at the risk of exciting tooth-ache, or occasioning the extraction of the tooth. Because, if carious bone be permitted to remain air and moisture, the principal sources of decay, will still find their way into the cavity, through the porous decomposed bone that remains, and thus lead ultimately to the loss of such tooth.

In similar circumstances the practice of empiricks is to fill carious teeth with fusible metals, mercurial amalgams, and even with tin or other foils, without any previous preparation of the tooth. This is almost literally to cover a fire with deceitful ashes. For the caries in the diseased tooth has not been removed, and the cineritious nature of the metal is not calculated to exclude the free access of atmospheric air and the moisture of the mouth to the cavity. The disease consequently spreads, eating away the bone, until at last the shell of the tooth breaks down

in mastication; while to the last, unless the tooth should prove painful, it is thought to be permanently plugged.

In explaining what the practice of others is, it may not be out of place here again briefly to recapitulate the author's own mode of treatment in similar cases; especially as it has given rise to a host of imitators, whose advertisements are teeming in every newspaper, and most of whom profess to exceed all reasonable bounds in the management of teeth.

His plan is to clean out the caries, and supply its place with a permanent metallic plug in the way usually practised by every respectable dentist; with this new and decided advantage, that with one or more applications of an anodyne, he first soothes the sensibility, and is thereby enabled to cleanse and stop, without pain, such tender teeth as formerly required to be extracted. Imitators unfairly call the metals they employ *a Cement,* and their dupes soon experience the chemical effects of the mercurial amalgam; their teeth become black, the metals drop out, and the complete destruction of the bone appears to

have been effected. Dentists, who have made nearer approaches to the new method, employ mixtures they also call Cements, and that are to last as long as the teeth. The thing is too ridiculous to require refutation; for if foulness and disease be permitted to remain under even an indestructible stopping, the tooth itself would fail.

These practices are injurious, when in some measure they come to be identified with a truly valuable discovery. They lead, however, to a favourable issue for society, in so far as that the preservation, rather than the extirpation of teeth, is daily becoming the only legitimate channel for a dentist to obtain public favour, with all its concomitant advantages.

Case 2d.—of a Lady before Confinement.—In this case the lady had lost a tooth on every similar occasion previous to this one. An upper small grinder was much decayed from lateral pressure, and occasioned so much pain, as to induce her to make up her mind to have it extracted, contrary to the advice of her medical attendants; she would, however, first try the

Anodyne. It was applied twice before the lady's confinement, and after her recovery, two years since, it was stopped with gold in the usual way; nor has it ached since, but continues as useful as any other in the head. The publishers are referred to for the authenticity of this case.

Case 3d—of a Lady before Confinement, but somewhat different from the above.—Of two carious teeth that ached much, and equally, in one the decay was recent and rapid, at the neck of an upper double tooth; in the other, an under wisdom tooth, the decay was of a very long standing, as its incurably dark appearance indicated*.

The Anodyne was applied to both the teeth: the upper one it relieved, and without any return of pain. In the under-tooth, pain always returned a few hours after the application of the Anodyne, until another preparation was

* There is a blackness of carious teeth of old standing that can never be removed. In that case the tooth can scarcely be broken down with instruments. There is another blackness of carious teeth, where they break down on the touch of an instrument. This latter is recent and curable; the former of very old standing, and incurable as far at least as a permanent stopping is concerned.

applied under the Anodyne Cement, from which moment the lady had no return of pain.

It would be easy to multiply cases similar to the above, and, were it proper or necessary, to refer to great numbers of the Nobility, and of the most eminent medical men in London, through whose liberality and kindness the Anodyne and its Inventor were at first recommended: but it is intended only to give a case or two for a class of cases. In this case Dr. C. attended the lady.

Case 4th.—A lady, residing a short distance from town, had a tooth temporarily stopped by an eminent dentist, with tinfoil, as it could not then bear the pressure of gold. For a whole fortnight she endured great pain, in the vain hope that with time it would wear off. At length the lady resolved to have out the tooth, and came to town for that purpose; but would first try the anodyne, of which (though incredulous as to its efficacy) she had heard much. It was accordingly applied, but ineffectually at first, from the high state of inflammation excited by the former plug. The operation was repeated in half an hour, and still the pain con-

tinued. Impatient and distrustful, the lady quitted the house to execute her first resolution of having the tooth extracted; but on her way having experienced relief, she kept off for a fortnight. When on her return the tooth was stopped in the usual way*; nor has there been any return of pain.

Case 5th.—A servant of the same lady had suffered from a similar complaint at intervals for several years, and had lost most of her teeth. To the few that remained the Anodyne was applied: they were cured, and have since continued well, although not permanently stopped. The same patient had two front teeth in the under jaw quite loose from the growth of tartar about their necks, which had induced absorption of a great part of their sockets. The tartar was removed, and the gums were severely and daily brushed together

* Since the publication of the first Edition, the Author has had the good fortune to cure many persons under nearly similar circumstances; among whom are included persons distinguished in the Cabinet or in the field, noblemen and ladies of distinction; and superior to all in such a case, medical men of the first rank, or their immediate relatives, who can be referred to, should circumstances require it, and all of whom were previously operated on by eminent dentists.

with the teeth, which are now quite fast. Many friends of the same family, and a sister of the lady, have had the Anodyne since applied to their teeth with equal success.

Case 6th.—An upper lateral incisor of a Nobleman was rapidly decaying, after filing had for some time retarded such decay. The cavity of the nerve was exposed, and the tooth so sensitive as not to admit of being dried even with lint. Although not sufficiently tender to induce its removal, it had been nevertheless given up as hopeless by an eminent dentist two years before. It was, however, cured by the Anodyne Cement, and stopped with gold. After some time, pain, as was feared, began to return. The gold was accordingly removed, and the healing procces again for a while pursued. It was found necessary even to apply leeches, to such a length did the fresh attack proceed. After a time the tooth was again stopped, and now (it is a year and a half since) remains well*.

* To the Nobleman here referred to, the Author takes leave respectfully to return his grateful acknowledgment and thanks; for to his patience, condescension, and consideration for the exten-

Case 7th.—A large double tooth in the upper jaw of an M. P. was stopped with gold, after a few applications of the Anodyne. This gentleman afterwards travelled into Wales, when from cold or fever the tooth began to ache so violently that he sent for a country practitioner to extract it, who, much to his credit, on examining the part affected, and seeing the gold, recommended patience and a draught. This advice was followed, and the tooth has never ached since, although upwards of two years have elapsed. A sister of the same gentleman suffered severe pain in one of her eye-teeth while in the country,

sion of a useful art, much of the success with which the author's practice has been received by the public, and particularly by persons of rank, is greatly owing.

The Author is fully aware of the great advantage to be derived from a more direct reference to persons of distinction, and to eminent professional gentlemen, than he has ever ventured on. And although, perhaps, no aspirant after professional fame or emolument ever had a more favourable opportunity of soliciting such permission; from the nature and novelty of his practice he felt reluctant to solicit names, although encouraged and patronized by a liberality and to an extent that does credit to an age little fastidious of a disagreeable way, where an important and valuable truth was to be ascertained. He may venture, in this solitary case, from the early stage of his practice at which he was recommended, and the rank of the parties, to refer (which he does with pride) to Mr. B——e.

and came to town to have it cured. The Anodyne was once applied, and gold substituted a fortnight after, nor has pain returned.

In the same family several cases of nearly a similar description could be named ; but one, as it is of an opposite character, is more important.

A younger brother was, with respect to the decay of his teeth, affected as the other members of the family, except that his decayed without pain, and were therefore neglected. The author on seeing them stopped nine or ten, several of which, although they had never ached, were so tender to the touch that the Anodyne was required before the caries could be removed. This being applied, they were soon after stopped in the usual way : pain, however, shortly returned in two of them ; but on the removal of the plug they became easy, and have been since left to their fate.

Case 8th.—One of the front upper teeth of a lady of rank became painful on the application of cold or heat; the caries was not in sight, and consequently proceeded too far to be stopped in the usual way, until the Anodyne had been ap-

plied twice, when the tooth was stopped with gold, and has since continued well.

Case 9th.—A lady had a large red spot on her cheek, for which she consulted the eminent accoucheur and lecturer, Mr. S——. On examination he pronounced a diseased tooth to be the cause, and advised her to try the Anodyne. The Anodyne was accordingly applied, which relieved the pain, and cured the tooth, when the red spot in the cheek, which was as large as a half-crown-piece, disappeared. The lady is now well. The only remedy formerly, on the bare supposition that the tooth was the exciting cause, would be extraction.

Case 10th.—The Hon. Mr. —— suffered such inconvenience and pain in the only remaining double tooth on one side of the under jaw, that his rest was disturbed almost every night for five months. His dentist, from the importance of this only tooth, repeatedly declined to extract it, and every remedy that money could procure was ineffectually tried.

The tooth became easy so soon as the Anodyne was applied, nor has there been any return of the

pain, although the tooth was too far decayed to venture on stopping it successfully with gold.

The few subjoined cases will put the advantages of the Cement in a more striking light.

Case 11*th.*—A lady residing in Sloane-street, had been confined to her bed-room for upwards of a year, when she was attacked by a severe tooth-ache in an under small grinder. Her medical attendant in vain recommended its removal: she would not consent. A physician of eminence was then called in, who declared that if the tooth were not extracted, the patient must sink under her accumulated maladies. The Anodyne was applied in presence of the attending surgeon, and that very evening it relieved the pain. A fortnight after the tooth was stopped with metal; but as the lady's general debility rendered the operation difficult and uncertain, the plug, in the course of a few months, dropped out, though the patient has never had a return of pain, and nearly three years have since elapsed.

Case 12*th.*—A member of the family of an eminent judge and noble lord suffered severely from tooth-ache during the greater part of her life, and

had lost many teeth. Out of seven aching ones that remained among a very few sound ones, six, after repeated applications of the Anodyne, have been permanently filled with gold; and the remaining one, a large double tooth, with the nerve exposed, although not decayed, continues well, the Anodyne being occasionally applied.

Case 13*th*.—A gentleman, holding a high situation under government, suffered much from tooth-ache, and had also lost many teeth. One, a wisdom tooth in the under jaw, became so tender that extraction was unavoidable. The gentleman, however, would first make trial of the new remedy; but the tooth was so tender that not even lint could be introduced. The decay was in the neck next the cheek, and the Cement was applied in its softest state; the pain was immediately eased, but the tooth could not be touched even the next day. Again, therefore, the Cement was applied without drying out the tooth, and permitted to remain as long as it would. In the course of the same week it dropped out, but the tooth continued easy, and admitted of being dryed out and cleansed. A

fresh supply of Cement was afterwards introduced, which lasted a month, and the gentleman went into the country. On his return the caries was, without pain, removed, and the tooth loaded in the usual way. It ought to be remarked, that, together with the caries, the whole bony substance was removed, and the tooth permanently stopped: nor has pain returned, although nearly two years have since elapsed. It is hoped this instance will render the decisions at least doubtful, of those who maintain that a tooth cannot be permanently stopped after the natural channel is exposed, and the nerves cut or decayed away. It is quite a common case.

The same gentleman, encouraged by the success of the first operation, had another tooth stopped which was much decayed, but did not ache. It was kept full of bees' wax or cotton dipped occasionally in spirits, for three years, during which time it did not sensibly decay. After it had been stopped with gold for about three weeks, the gentleman began to experience unusual pains in his eye, and the side of

his head, and, as he thought, about the roots of the tooth, which was an upper large grinder. He returned to ask if the thing could be accounted for. It was so: the gold was removed; blood flowed from the cavity; the tooth was restored by the Anodyne to its former quiet state, and has ever since continued easy, with the old treatment of it.

This gentleman's case illustrates well the use of the Anodyne. Any tooth, however tender, may, in a very short time, be put in a state to be operated on; and if left in that state will continue free from pain, perhaps permanently, and it may be only until some unexpected cause, as cold, &c. bring on a new fit of the pain. Teeth that have been long diseased, if attacked with pain, may be relieved by the Anodyne, and kept free from pain by a little care on the part of the patient. But if a tooth that has been for years diseased, especially if a large double one, be stopped in such a way as to confine the matter that is apt to form within it, pain is sure to return; and may continue untilthe matter or blood collected within is discharged,

either at the root, as a gum-boil, or at the mouth of the caries. Teeth, however, that are attended to early, within a year or two of the first commencement of disease, never pain after a cure, when permanently stopped.

Among the disadvantages to which such cases as the above must have subjected the new method of treating the teeth, may be mentioned that of the Marchioness of ———, who was recommended to try the Anodyne by a London physician, who himself had been cured by it three years before, and who still enjoys the use of a tooth, which, but for the Anodyne, he must long since have lost.

Case 14th.—Untoward.—A tooth that had been filled in the usual way, some years before, broke down in mastication, and in such a manner as to leave no cavity to hold any thing ; not even the Anodyne itself, above a day, especially as it was impossible, from its being a solitary double one, to avoid using the side of the mouth where it was situated. The Anodyne being repeatedly applied, the tooth was fast approaching a state when it could, without pain, be scooped out, and permanently stopped in the

usual way; but the lady's patience was worn out before the process was complete, which was only of importance in as far as the lady's high rank afforded her a more extensive opportunity of making known so valuable a discovery as the Anodyne.

Case 15*th*.—A Lady suffered much from an unaccountable pain in her head, ears, &c. for upwards of three years, during which time she consulted several medical men, to no purpose, and consequently began to believe that she was incurably affected with the Tic Douloureux. This lady had never sustained the loss of a tooth, although several had become carious. The molar teeth in both sides of the under jaw were extremely tender on touch, and on application of heat and cold. Several dentists had tried to plug them, but they were too tender even to be cleansed, and so were permitted to remain. Their decay commenced at their necks next the cheeks, and the caries, so far as it went, was as black as charcoal. It was therefore considered a case for the Cement, which was tried, and with success. Of the six affected, the two wis-

dom teeth were very much decayed, and their removal was recommended, which operation was performed by Mr. Cartwright, in his usual able manner. The four others were attended to and dressed about once a week for two months—the pains gradually ceased—the lady began to have good rest at night—and the four were stopped in the usual way before she left town for the summer*.

Case 16*th.*—The Marchioness of ———, recommended by Dr. C——, had a molar tooth of the under jaw much decayed, and painful; she consulted the author more than once, before any thing was done. A long-continued fit of tooth-ache, and some sleepless nights, however, overcame her scruples; the Cement was applied, but the pain remained undiminished during the night. The next day the Cement was to be renewed, but on learning that the tooth was then quiet, and had gradually become so from an early hour

* A year after the above operations were performed, the Author had an opportunity of again attending to the case. The lady continued well, and such of her teeth as were only filled with tin-foil were unstopped, and filled with gold.

of the morning, the first portion was not disturbed, and the pain shortly after ceased altogether.

Case 17*th*.—Two female servants of an eminent solicitor had each a severe tooth-ache cured, and their teeth permanently stopped, a year before. This gentleman called one day with a noble lord, who suffered much from an under wisdom tooth that was nearly half decayed. The Cement was applied, and the tooth became easy; but the pain returned in the night more violent than before. Next day the Cement was removed, and the part washed; a powder was applied under fresh Cement, to prevent a too perfect adhesion, and the tooth continued easy; when the nobleman was obliged to leave town for the season.

Case 18*th*.—A lady, who usually resides in the country, had suffered so much from nervous affections of the head, as well as from general debility, arising from the want of rest, that she came to London for the express purpose of consulting a physician, as in addition to her other complaints, it was feared that she was sinking into a decline. In the course of conversation with this gentleman, the lady alluded to the Anodyne Cement, and

asked him whether he was acquainted with its peculiarities, or the character of its inventor. The Doctor, with a pardonable distrust of such inventions, hinted his aversion to them, and advised his patient to go and consult some long-established eminent dentist, naming at the same time Mr. ———t. The lady, however—having repeatedly heard of its good effects, even in the most desperate cases—resolved to try the Anodyne Cement, which was accordingly applied to four of her teeth, with the usual success. In the course of a few hours she began to sleep, the first time for two months, without several folds of a handkerchief between her teeth. To the honor of the Doctor, be it added, that he instantly expressed himself warmly in favour of the Cement, and watched the progress of his patient's cure with a zeal and a minuteness that not even indisposition could abate. In this case pain again and again came on, unfortunately, in two of the teeth; they were consequently extracted, when the extreme points of their roots were found (a very rare occurrence) quite black and diseased.

Case 19*th*.—The same physician afterwards

recommended Lady ——— to the author, to whose teeth the Cement was accordingly applied, and with such decided and rapid effect, that in less than one minute from the time of its application, all pain ceased.

Case 20th.—A young gentleman while at school suffered severely from tooth-ache, not merely in all his front upper teeth, but also in several of the double ones. The disease had originated in lateral pressure, to obviate the effects of which, several teeth had been filed and stopped with fusible metal, and one excised by Mr. F——. The metal soon dropped out of them all, the caries made great progress, and the pain returned in all that were so afflicted. In this stage of the case, as a last resource, several teeth were extracted, but even this proved insufficient, and the Anodyne Cement, being then for the first time heard of by the family, was accordingly had recourse to, which, as usual, afforded immediate relief. The case was proceeding to a favourable termination, and all the diseased teeth, with the exception of one, stopped in the usual way. This one tooth was too tender to be finished when the youth was obliged to leave town for school,

but without pain. It was agreed that he should return weekly, to have the anodyne applied, until the bad tooth should be cured, and he did return in pain; for when at ease he was not sufficiently careful to retain the anodyne in his tooth. Although relieved every visit, and free from pain as long as the anodyne remained, his friends, who never took the trouble to accompany him, except at the first visit, not knowing the nature of a practice that seemed so tedious, took him to some other dentist, whose operations, instead of effecting a cure, led to a return of all his maladies. A long time after the medical friend of the family waited on the author, with the young gentleman's fee, which was by no means equal to the trouble that had been given. It was with difficulty that the facts stated above were elicited from the messenger; he would neither hear an explanation of what was the case—what it might have been if justice had been done to the case. His grave opinion was that the only cure for tooth-ache can never be any other than extraction. Such circumstances might at first have somewhat retarded the spreading of so valuable a discovery. It is but jus-

tice to state that almost, without an exception, every other medical man who conversed with the author exhibited an eager anxiety, for the sake of the public, to be thoroughly acquainted with the pretensions of the new treatment of the teeth.

The gentleman here meant is respectfully referred to the distinguished surgeon, Mr. C. B. who, without being aware of the above circumstances, an opportunity occurring, recommended a trial of the Anodyne, as several of his own relatives had been successfully cured by it.

Innumerable other instances could be adduced to prove that the Anodyne Cement will relieve and permanently cure, immediately or by repeated applications, the most inveterate toothache, in every case where the disease from long continuance has not become habitual; and even where it has, that the application of it will greatly relieve almost any case whatever. The author would certainly recommend the extraction of incurable teeth, and useless stumps; but he thinks it right to state what he has said, for the comfort of those who cannot be induced, by any suffering, to submit to such an operation.

Before dismissing the subject, it is proper to refer to a practice lately introduced, but which is already dying a natural death, namely, the excision of teeth *. A tooth is sometimes successfully excised—that is, snapped off, with a sharp pair of pliers, lower down than the disease, and the nerve may also be sometimes dragged out of the remaining roots; but in general the nerve either breaks where the tooth has been fractured, and continues to give pain until it withers away out of the reach of contact with food, &c. or the nerve of the part cut away may remain like a thread issuing from the channel in the root. In either case the treatment is to cut out the nerves so far as is attainable, when the patient will permit. The remaining roots may continue free from pain, and in some instances be useful; but in general such roots can only be looked on as old stumps.

The author can refer to cases in his practice, where, after much suffering on the part of the patient, he had to apply the Cement to cases

* I have seen too much of the injurious (would that I had not to add fatal) consequences which have resulted from the revived operation of excision, or cutting off of decayed teeth.—T. Bell.

thus treated, and always with immediate success. And also in accidental cases, where teeth have been broken by an unsuccessful attempt at extraction, by a fall, or a blow, &c. As one additional proof of the superiority of the Anodyne Cement over every remedy hitherto used, he may state, that those who profess excision frequently try to stop tender teeth with fusible metal, after attempting to stun the pain by the application of icy cold water. This is a proof of the inefficiency of excision as a general remedy.

The extraction of teeth as a remedy for toothache, is, as almost every person must be practically acquainted with, of very old standing; but extraction for any other cause is so novel in the history of the art as to require a more particular notice. The advocates for this practice assert that no tooth should be permitted to remain in a jaw that has not one opposed to it in the other. Because such tooth, for want of opposition, will be ejected from its socket, and occasion irritation by this natural process. Admitted: but there are many and reasonable objections to this practice.

In the first place, extraction is an unna-

tural, and to most persons a horrifying operation; and rather than submit to which, they put up even with tooth-ache until time wears out the tooth itself. The feelings of the many, therefore, rather than of the very few who make light of extraction, ought to be consulted as far as possible, especially if to do so be the more reasonable course to pursue. The advocates for extracting such teeth as have no opponents in the other jaw, must be perfectly aware; that, in proportion as the double teeth are removed, an undue pressure falls on the front teeth, and in a manner that must eject them likewise from their sockets, or wear them down by attrition.

To prevent this consummation, teeth that have no opponents in the other jaw, must have artificial ones applied. Every vacancy in the back part of the mouth, when it is so great as to occasion an injurious pressure on the front teeth, ought to be artificially filled up; and in such a manner as not to injure adjoining teeth by fastenings, and yet feel easy and comfortable to the wearer.

It is not intended here to assert that false or artificial teeth are quite so comfortable as one's own, except in the same way that a wooden leg

is preferable to no leg. The wooden leg, in a great measure, gives the use of two legs; and false double teeth give not only the use of themselves and their opponents in the opposite jaw, but keep the pressure off that would annihilate the front ones.

It is intended, then, here to assert that those dentists who recommend the extraction of sound teeth, or even roots that are without opponents in the other jaw, know but little of the art they profess. They know nothing of the present very improved modes of constructing and applying artificial teeth.

While on this subject, it may not be out of place here, although the work is written professedly for the public, to address a few words to medical students; whether they make the teeth their more particular study, or only as a branch of their general education, with which they ought not to be totally unacquainted.

In the great number of publications on the teeth, they may often feel at a loss to select those that are best calculated to afford the requisite information in the fewest words; in order that, while they may not be altogether unacquaint-

ed with any branch of the anatomy of the human body, their attention shall not be too much diverted from their more serious studies.

In perusing approved works on general anatomy, they acquire little more than a certain technical acquaintance with the formation and structure of the teeth, which in general proves of little use either to their patients or themselves. They ought to know, then, that extraction of a tooth as a cure for tooth-ache, is as imperfect a remedy, to compare small things with great, as the amputation of a limb is inferior to its cure. Country practitioners, as well as army and navy surgeons, might, at first starting, and in absence of other employment, render incalculable service in their various stations, by attending to these simple and well-known facts:—That filling up a carious cavity in a tooth with any substance that shall resist decomposition, and exclude air and moisture, will in general prevent tooth-ache, and save the tooth from further decay:—That for every tooth that is extracted an additional pressure falls on those that remain; which pressure produces a wasting of each other's substance, or a loosening in their sockets, with a consequent

dropping out:—That the accumulation of any foreign substance, as tartar, on the teeth, is productive of inflammation, and a forcing away of the gums, with absorption of the alveolar processes; and that the simple removal of such matter with a tooth-brush, or with scaling instruments, if too hard for the brush, is calculated to prevent these evils.

Writers on the teeth may perhaps, be divided into three classes or orders: those of the first—Original thinkers and investigators, who have thoroughly examined the nature and structure of the teeth, and whose writings are intended for professional men: A second, or those professional men who make the teeth their exclusive study, as well in the preventive and remedial treatment as in the construction of artificial ones; and who also write for the instruction of the public generally, as well as for members of their own profession.

A third class is those who, having a general medical education, derive their living from the profession of a dentist only. These last, when they instruct others, evince a natural leaning to the technical phraseology inseparable from their

previous habits and education ; while they regard their real calling as an act of perpetual condescension, and are thereby less fitted for the instruction of the general public. The very thought of such a thing may strike them as humiliating.

The first class of writers have derived their information from actual observation of the subject, and from experiments.

The second classs, with an observation and examination of cases, connected more immediately with the teeth, as well in dead as in living subjects, appear, from the practical nature of their observations, to be most generally perused and sought after.

The third class, engaged in the profession of the dentist, and educated with the feelings of the first, addresses himself more particularly to the medical student ; and while he is unable to soar into new fields, in the high regions of discovery, he disdains to inquire into a very material branch of his own profession—viz. the construction of artificial teeth ; the want of a due knowledge of which leads him into errors, the prevention and correction of which, in matters of such serious

importance to society, ought to be the anxious wish of every successive writer who knows or thinks he knows better.

It is not intended that medical practitioners should themselves be qualified to construct and apply artificial teeth; but they ought to know that such can be constructed and applied in a manner that, without injury to adjoining ones they shall perform the usual functions of natural teeth in a satisfactory manner; and last of all, that what they may, from ignorance of these facts, consider an incurable disease in the jaw, may possibly be no more than the effect of pressure of the under against the upper row of teeth; when, from the loss of the double teeth with their broad flat surfaces that used to meet, that pressure now falls exclusively and awkwardly on the front ones.

As a proof of the liability of writers purely medical, when addressing medical students, to fall into errors which a superior acquaintance with the mechanical part of the dentist's art would obviate, the following chapter is taken from a very able and clever work recently published, and which, from the talent and research

with which it is compiled, must long continue to be a class-book to the medical student when he studies "the Anatomy, Physiology, and Diseases of the Teeth." Any practical dentist will be able to prove that the diseases here referred to are produced by unusual and unnatural pressure of the upper against the under row of teeth; and that artificial double teeth, or grinders, will cure the disease, if had recourse to before the complete absorption of the sockets of the affected teeth.

"OF THE DISPLACEMENT OF TEETH BY DEPOSIT OF BONE IN THE ALVEOLAR CAVITY.

"Independent of the loss of substance in the gum and alveolar process, which has already been described, the teeth are frequently forced out of their natural situation by a species of exostosis, or deposition of bony matter within the sockets. This is generally confined to the teeth near the front of the mouth, and the incisors of the upper jaw are by far the most subject to it. The bone is deposited in various parts of the alveolar cavity, producing corresponding deviations in the position of the teeth. When it takes place only at the bottom of the socket, the tooth is thrust directly downwards, giving the appearance of a simple elongation of the tooth. At other times it is deposited on one side of the alveolar cavity, and the tooth is thrust towards the opposite side. Thus, if it occurs on the inner side of the alveolus of the central incisor, the tooth is thrown upon the lateral incisor, which it overlaps, and a space is produced between the two central incisores. This is

rendered still more striking if, as is often the case, the two alveoli of the central incisores are similarly affected: the two teeth are, in that case, forced very much asunder, and the space between them is very obvious and unsightly. If the bony deposit should be formed at the back part of the cavity, the tooth is made to project forwards, and very much overhangs the lower teeth.

"It appears that this affection arises from some disturbance in the action of the vessels of the alveolar periosteum, which consequently deposits bone in patches; and, from this view of its cause, it would appear that no remedy can be expected to be of much service. The abstraction of blood in the early stage has been adopted, but with very doubtful success. It has been usual to file the teeth in these cases, with the view of reducing them to the length of the others: nothing can be more incorrect than such a mode of treatment; instead of remedying the evil, it increases it, by exciting to a still greater degree the action of the vessels of the periosteum; whilst it also shakes, and ultimately loosens the affected tooth, which had already in some measure lost its support by being partially dislodged from the socket. I do not think that any treatment can be depended upon for checking this affection. The bony deposition will continue to be formed in spite of all applications which may be made to prevent it, until, at length, the tooth becomes loose, and begins to excite irritation in the gums and alveoli. The bony deposit appears also to cut off the connexion between the tooth and the bone, by blocking up the foramina through which the vessels and nerves enter the alveolar cavity, and the tooth becomes totally killed. On removing it—an operation which will always be ultimately found necessary—the extremity of the root will, almost invariably, be seen more or less reduced in length by absorption.

"In these cases, as well as in the denudation of the roots from absorption of the gums and alveolar processes, they occasionally become blackened by exposure, and have a very disgusting appearance. This appears to arise from decomposition, either of the

surface of the bone, or of the periosteum which still covers it, and which is killed by exposure. From actual examination, the former is probably the true cause of the discoloration, which, however, is a comparatively rare occurrence."

THOMAS BELL.

The student, who would thoroughly understand the object and nature of the above remarks, is referred to the description of the various causes of decay in Teeth; and to the article, Artificial Teeth, at the end of this Treatise.

SECTION II.

Tic Douloureux.

INTIMATELY connected with diseases of the teeth, appears to be the dreadful malady Tic Douloureux, a term improperly bestowed on almost every unaccountable pain, but more especially of the head*. Many credible witnesses

* Tic Douloureux is neither more nor less than a nervous throbbing sensation, chiefly confined to the space of three teeth

have asserted that it is nowise connected with the teeth, and instance cases where these have in vain been extracted to relieve it, particularly the melancholy one of a well-known London physi-

on each side of the upper jaw, namely, the two bicuspides and the first molaris.—Bew.

The first of a series of evening meetings was held yesterday in the elegant rooms of the Physicians' College. The object of these assemblies is to afford to men of science an opportunity of meeting for the purposes of conversation, and discussion of matters connected with their pursuits. By way of giving a beginning to the evening, and of affording a subject of conversation, Sir Henry Halford read a paper on the Tic Douloureux. In this essay he put forward a theory, that the distressing malady which was the subject of it, is produced either by a deposit of bone out of the natural course, or by an exfoliation of bone, the consequence of some disease or injury.

He maintained this notion with great ingenuity, and mentioned a great number of cases which had fallen under his own observation, which tended to support it. In further illustration of his position, he produced a cranium, in the interior of which a most extraordinary deposition of bone had taken place, and the history of which strongly corroborated the theory for which he contended. The discourse was rather short, but was listened to with great attention, and excited, as it was well calculated to do, great interest. The rooms were fully attended; and, besides the most eminent professors of medical science in the Metropolis, there were many persons of distinction in other professions. Nothing can be more creditable to the good taste and liberal feeling of the College of Physicians, than this sort of invitation to social intercourse among men of science, and nothing more calculated to answer the purposes they have in view.—Times Newspaper of 15th April, 1828.

cian, who, a few years ago, became its victim. Notwithstanding this, as instances supposed to be Tic come almost daily under the author's notice, without presuming to offer any decided opinion of his own on so delicate a subject, and one which appears to have baffled every attempt at a satisfactory exposition of its nature, he hopes to be excused if, on a subject of anxious inquiry with many, he exceed the strict line of his professional pretensions, and state generally, a few of the cases with which, from time to time, he has been practically acquainted, and which were apparently produced by carious teeth in their various stages of decay.

Anomalous pains of this kind are frequently occurring in teeth which were free from any pain when stopped, and may be the result of temporary inflammation in the bony substance, or of its blood-vessels, or in the sockets, which might yield to opening medicine, and remain easy when permanently stopped; or may be the result of a diseased state of the nerves, rendered incurable from long continuance, unless it were possible to cut or burn away their diseased surface, which

operation not unfrequently leads to a more healthy action of the parts, permitting such tooth to be permanently stopped. But when moisture oozes from the decayed surface, and, accumulating, forms matter under the plug, the most painful consequences frequently ensue, which the early removal of the plug would prevent; or if only temporary inflammation has taken place, the tooth may, after a time, be safely re-stopped. In some cases pain will ensue, with swellings of the parts, in the course of an hour or two, while in others it may not take place for weeks or months.

The swelling often extends to the bones of the jaw, but will generally subside if the exciting cause be soon removed;—it, however, sometimes becomes permanent, and may be with or without pain. Results precisely similar often take place from the accidental filling up of a hollow tooth, with food or any other substance which is either sufficiently solid or clammy, for a time to seal it up; the bodily system having been predisposed to inflammation. Is it not probable, then, that such circumstances are some-

times the exciting causes of even Tic Douloureux? The following CASES appear to the author to bear him out in this opinion :—

The most decided case of the kind, and which from its violence and permanency, he has ventured to consider as allied to Tic Douloureux, which has fallen under the author's notice, is that of a lady, who has suffered severely from the complaint for several years past. So violent and long-continued have been the attacks, that she has been unable to attend to the ordinary affairs of life, and her friends watching her by night and day, have long ceased to indulge in the hope of her perfect recovery, or a cessation of her suffering.

The malady exists in the one side of her upper jaw, over stumps and excessively carious teeth. The pain is not continuous, but the intervals of repose are short, varying from minutes to hours and days, and even weeks.

The pain commences with a severe throbbing sensation, and more particularly if any attempt is ever made to examine those carious teeth. Even opening the mouth appears a sure cause

of a fit. It is upwards of two years since the author had occasion to know the case, which was on account of some teeth (the corresponding ones) that began to be carious in the other side of the same jaw. In one, (the first large grinder,) the decay commenced in the natural indentation of the grinding surface; in the one beyond, a piece of its side next the cheek was broken off, and exposed the nerve;—the two small grinders were also carious from lateral pressure, and they had all become tender, accompanied with occasional attacks of tooth-ache. The Cement was applied to all, except the first named, which was not so bad as to require it at first, and into it gold-stopping was introduced.

The application of the Cement, a substance of much the same appearance and consistence as soft putty, is almost as quick as thought; and in delicate cases not calculated to cause annoyance: where the successful introduction of gold would, from the tenderness of such teeth, be quite impracticable. As often as any attempt was made to clean out the diseased cavity, an attack of severe pain always cut

short the process. At her own desire gold stopping was attempted to be introduced, but so ineffectually was it done, that after several months the tooth began to ache, when it became necessary to remove the gold entirely.

The Anodyne invariably and instantaneously allayed the pain of it, and also of the other carious teeth as soon as applied, and as they continued free from pain for weeks, and even months together, after each application; and as any attempt at a more permanent operation was always attended with agonizing pain in the side first affected as often as the mouth was stretched open, all further attempts at a more permanent stopping of any of the teeth have been altogether abandoned.

Case 1*st.*—A gentleman having his teeth cleaned, and several stopped, had one so tender as to require the application of the Cement. It was the second small grinder in the under jaw of the right side. He complained of tenderness in the two upper small grinders of the same side, but in which no symptoms of decay were visible. On probing between them with a point, decay

from lateral pressure was discovered. A separation was immediately effected with a file, and other cutting instruments, in order to admit of cleaning out the caries, and stopping the teeth, each one requiring to be separately attended to.

The caries was discovered to have proceeded so far that it could not be thoroughly removed without repeated applications of the Cement, after which the teeth were permanently filled with gold in the usual way.

During these operations, Tic Douloureux became the subject of conversation. The gentleman said he had suffered severely from it under and near the left eye, about four years before. For four months, he continued, he was in a state bordering on delirium: his friends watched by his bed-side by turns during the whole of that period. The pain at last ceased, and he recovered his usual health; nor had he any return.

On a further examination of his mouth, the roots of two decayed teeth appeared black in the gum. By the way, he was not conscious of having had tooth-ache during any period of

his life. The roots were in the upper jaw, and corresponding with the two just stopped. An attempt had been made to extract them within the previous two years, because they became offensive, but they were broken in that attempt. The probable time they had taken to decay laterally, from the first stage to the period of the attempt to remove them, might have been between two and three years; so that there is little doubt that if the gentleman's teeth had been duly examined and extracted, or cured, previous to the severe inflammation of their nerves, and the consequent symptoms attending his case, the suffering he endured might probably have been prevented. No other manifestations of the malady now remain, except the roots of the teeth over which, in the jaw, all the pain had been experienced. The gentleman is in a public office, and his friends are high in station.

Case 2d.—The Lady of an eminent Divine suffered much and long from nervous head-ache, and occasional twitches of tooth-ache, which produced restlessness, and want of sleep to such

a degree, as to threaten her very existence. Medical aid was had recourse to in vain, nor were the teeth even suspected, until Dr. D——, who had on several occasions witnessed the beneficial effects of the Anodyne Cement, recommended that the teeth should be examined. Several were discovered to be faulty; the Anodyne was applied; a soothing sensation was soon experienced. The gums were spongy from the great collection of tartar that clung to the teeth. The tartar was completely removed, and the gums were restored to a healthy state, by the severe and daily use of a hard tooth-brush. The teeth, five in number, at first so tender as scarcely to admit of being wiped, were soon after stopped with gold in the usual way. The lady gradually recovered her wonted health and spirits, and after the lapse of about a year and a half, she remains well.

Case 3d.—A young lady of about sixteen years of age, suffered much in the same way for about four months. She gradually declined in health and spirits, nor could all the art of her medical

attendants alleviate her sufferings, nor bring her repose. The usual advantages of the country, and even the sea-side, proved unavailing. Her teeth were tender on the application of heat or cold; but they were not so bad as to excite any particular notice. Dr. ———, Physician to a Royal Duke, on seeing the case, suspected the teeth, and waited on the author with his patient. The Anodyne was applied to several of the young lady's teeth; she felt instant relief, had a good night's rest, and improved forthwith. She is now well, and can eat with those teeth that were so tender, for they are now permanently stopped with gold*.

Case 4th.—A lady, who is highly connected, suffered for years from what was supposed to be Tic Douloureux: and for three years she had, together with other advice, that of Sir A. C——r, without any visible improvement. About a year and a half since, the same lady consulted the

* Since the first publication of the above case more than a year has elapsed, and the young lady has never had the slightest return of pain.

author respecting her case, she having several carious teeth in various parts of her mouth, to the extraction of which she could never be induced to submit. The Anodyne was applied, and successfully from the first. All her nervous head-aches, ear-aches, want of rest, &c. &c. ceased forthwith, and she is now in the enjoyment of as perfect health as her friends could wish. The lady now usually resides at Brighton, where she formerly used to try the effect of the sea-breezes, without any beneficial effect. The Author was lately reminded of her case by the lady herself, who came to town for the express purpose of an annual inspection of so interesting a case. The name of an eminent medical man is more distinctly referred to in this than in some of the other cases, because it appeared an important one, and because the Author has not the honour of a personal acquaintance with him; although in its commencement an opportunity was even sought of explaining the nature and success of a practice that required only to be known in order to be successful.

Case 5th.—The following is a recent case sent

by Dr. ———, of Russel-square. A young lady from the country had come to town expressly to have the best medical advice, having for the four previous months taken the advice of several country practitioners, without success. Incessant and severe pain was felt, as she supposed, in the bones of one side of her nose, which passed along under her right eye to the forehead, and which nothing could ever relieve, even for a second. On examination her teeth and gums were found healthy and clean, with the exception of the two large front teeth, which, as it turned out, had been separated by a thin file, some months before, on account of a caries that threatened to attack them from lateral pressure. On probing the carious parts she experienced pain. The Anodyne was applied, but when she returned on the following day it was found that the pain still continued. Although it was then feared that her teeth had nothing to do with her malady, a fresh trial of the virtue of the Anodyne was made, having previously prepared the teeth by cleaning out a good deal of the caries, in order to admit of a more perfect

application of the Anodyne. On the lady's return next day, she declared with joy that her pain was greatly diminished, and had for a time ceased altogether. Two days after, and greatly improving, the young lady, unfortunately, returned to the country, without waiting to effect a more perfect cure.

It would be easy to fill a volume with cases of anomalous pains like the above, which the author leaves it to those more conversant with that formidable malady the Tic Douloureux, to decide, if they were in any way allied to it. Suffice it to say, that there are many instances where the extraction of the teeth might probably relieve the pain, but in which many obstacles oppose themselves to such a measure; partly from the antipathy and horror of many to have a tooth extracted, and partly from the uncertainty of the affected teeth being the exciting cause of the malady. The Anodyne Cement has its peculiar advantages to recommend it. It can be applied without pain, and it is, in general, equally effective, if not more

so, than extraction. In conclusion, it may be permitted to remark that, in nearly all those cases which have fallen under the author's observation, there has been an unsound tooth underneath the seat of the pain, denominated Tic Douloureux.

ARTIFICIAL TEETH.

VERY little new or important matter has been added to the public stock of knowledge respecting the teeth since the time of HUNTER, whose able and elaborate Treatise on that subject has been the mine from which almost all his successors have, in some shape or other, drawn their literary wealth.

As regards Artificial Teeth, in particular, scarcely a single work can be found competent to instruct either the public or the dentist; and it is from a firm conviction of the necessity of some Treatise on this last department of the art, that the Author has presumed to come forward,

not so much in the presumptuous hope of perfecting the system, as of leading the way to future material improvements.

The art of supplying artificial teeth, so as satisfactorily to answer the purposes of natural ones, is as yet but little understood, and still less practised. Hence the antipathy so generally evinced towards the adoption of them—as in the analogous case of scaling, that is, cleaning the teeth with instruments. Because some mischievous pretenders have rendered them white by the injudicious use of acids, a violent outcry has been raised against scaling in general; whereas the plain truth is, that to cleanse the teeth, when matter has offensively accumulated about them, with instruments, and finely powdered pumice stone, is so far from being injurious, that it is actually an indispensable operation, and as harmless as the application of soap and water to the skin.

With reference to artificial teeth, we may take this opportunity of stating, that they can do no more injury than those whose place they supply could have done had they remained sound, while,

provided that they be adequately manufactured, they may be rendered nearly equally serviceable. In a case, therefore, of such moment, and one referring itself so closely to the convenience of nine out of ten individuals, it becomes highly necessary that the public should have at least some little insight, some glimmering of information, on the subject*. If a protracted apprenticeship be requisite to perfect the tailor, the shoemaker, or the grocer, much more are time and experience needed to form a first-rate dentist; a profession, however, which has been but too often abused. The cause of this is obvious. In most trades and professions some ordeal is required, some indisputable voucher of ability, before public confidence is granted. But the dentist puts forth no such certificate; he launches at once into practice, (his business being unregulated by fixed rules, as is the case with law or medicine); and

* When the teeth are lost, it is impossible to make use of solid food; and if the stomach is then loaded with pieces without being masticated, the person is exposed to the most distressing indigestions. The stomach loses its power of contraction, and it becomes weak in proportion as it no longer digests. We can only then remedy that state of languor which is the consequence, by replacing teeth in lieu of those which are lost.—De Chemant.

he is not scouted as an empirick, until the effects of such empiricism have become too glaring to escape general detection.

But to enter more immediately on the subject before us.

In constructing artificial teeth, utility and appearance are mainly to be considered by the dentist. The former refers to the plan adopted in a particular case, and the success with which it is executed; the latter to the successful imitation of nature, as well in the form and proportions of the teeth, as in the shape and expression of the mouth*.

In order to be useful, artificial and false teeth must be set on plates of bone or metal, adapted to the form of the gums, at the parts where

* In consequence of the eomplete, or even partial, ruin of the teeth, the face shrinks, the voice loses its harmony, beeomes shrill, or is lowered, and the pronunciation, of course, very imperfect The countenance assumes a different expression; is harsh, or morose; the flesh of the cheeks will flag, and hang down; wrinkles will prematurely furrow the face, the dimensions whereof are no longer the same as they were. The mouth and nose also change; the chin seems to be longer, and in reality approaches nearer to the latter organ: in short, every part of the face is dis-composed in a more or less offensive degree, and presents the anticipated sight of painful destruction.—JERBAUX.

teeth are wanting; or by pivots introduced and fastened in stumps. This latter plan is applicable to all the front teeth and two small grinders, and when well executed, is capable of defying the closest scrutiny to detect the deception; while, if they are well supported by double teeth to prevent their shutting against those opposed to them in the other jaw, so as not to shake and loosen them in their sockets by lateral and forcible collision, every time the mouth is shut, as in old people, after losing all their double teeth, they are almost as useful in every respect as those whose place they supply could have been.

Artificial teeth are made of the hardest ivory, generally the sea-horse tooth, or of mineral paste, a sort of china*. These latter, could a sufficiently

* Mineral teeth are composed of baked earth, covered with enamel flux, and coloured to imitate nature. No way of attaining a perfectly natural appearance has yet been attained, but by placing in human teeth of the same description as those whose places they are intended to supply.

Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaptation of artificial teeth is an art in which some greatly excel others. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to speech and

natural appearance be given to them, and could they be equally well adapted as other teeth, possess the advantage of being very cleanly, and might be made to answer in cases of pivoting; but they have not been brought to such perfection yet, and from their very nature they never can be made to answer well in more extended cases; for in baking, they lose so much in shape as never to fit comfortably in their place; and the mouth is injured, and the remaining teeth are loosened and twisted in accommodating themselves to mineral teeth.

Artificial teeth formed of ivory, can be made to imitate nature by any person having the slightest mechanical skill; and they can, in some particular cases, be formed with the natural enamel on them. This last mode is had recourse to for persons who object to false teeth, and who also dislike the discolouration of the ivory, that inevitably takes place when in use in the mouth. Generally speaking, however, false teeth now

mastication, and even a greater blemish to the countenance than the want of teeth: those that are well adapted are, on the contrary, easy, useful, and ornamental.—Jos. Murphy.

excite but little repugnance on the part of the public.

They are supplied principally from the Continent, where the examinations of dead bodies for the benefit of the living, do not call forth the same feeling as in this country. Dead teeth, then, being the most perfect imitation of nature, and having their own natural enamel on them, are most commonly used.

When they are to be fastened by means of pivots*, their roots are cut off at a proper length; the roots on which they are to be pivoted are filed smooth, as high in the gum as possible, so that when the false tooth is fixed, the gum resumes its wonted place, and embraces the new tooth.

* *Grafting or Pivoting Teeth on Stumps.*—When either or all of the six front teeth are decayed and painful, or so unsightly as to render their presence disagreeable, natural teeth may be fixed to the roots. Whenever this method of affixing teeth can be adopted, it is far preferable to any other; for as long as the roots remain firm, which is often many years, we can renew them at any time, without the least inconvenience, as they are independent of any other teeth; they may be fitted so nicely, as to defy detection, even on minute inspection. If the root is sound, they will, by their firmness, answer every purpose, almost equally well as the former natural teeth, whose place they occupy.—J. Fuller.

In cases where no roots remain to which new teeth could be fastened, plates, so formed as to fit and rest easily on the vacant spaces in the jaws, are made of ivory, or of metal, usually of gold; the false or artificial tooth or teeth are cut to the proper length and riveted on the plate; or a pin is previously soldered to the plate which enters the natural cavity in the new tooth, where it is secured by means of thread wrapped in sufficient quantity around the pin, to keep thetooth in its proper place. In this part of the operation there is a secret, as yet known only to a few; it consists in dipping the pin and its binding in spirit varnish, which assists materially in fastening the tooth, and resisting the admission of moisture. Perhaps it would be an improvement so to varnish all artificial teeth occasionally, as if not carefully attended to they absorb so much moisture of an unpleasant character, as to become offensive. Exposure, however, to a draught of pure dry air does away, at any time, with this inconvenience.

As plates of bone are used as well as of gold, it may be proper to explain how some-

times the one and sometimes the other is to be preferred.

In the case of an old person, after all the teeth have disappeared, the face becomes shorter by about an inch and a half, almost the extreme length of two teeth as they meet in the two jaws. To restore the former length of such a face, if gold plates be used, the false teeth must be fastened without cutting off any part of their roots, which would give a hideous appearance to the face. The teeth, from the absence of sockets and gums to conceal their roots, would have the appearance of rails with wide spaces between. To obviate this inconvenience, the roots of false teeth are cut off when they are to be fastened on gold plates. In consequence of which, if the sockets of the former teeth be absorbed, it is impossible to restore the natural length of the face. Notwithstanding the incompatibility of this method, in such a case it is frequently adopted, and is set down as an evil inseparable from the art. For although the teeth look natural enough, there is such an unnatural shortening of the face, and a falling in, with wrinkles of the cheeks attending

them, that any one, however regardless of fashion, would rather go without. The inconvenience attending gold plates, where the teeth, together with their sockets, have altogether or very much disappeared, is readily remedied by plates of ivory.

Gold plates are raised on brass models of the jaws, as spoons on a die; plates of ivory are dug into with gravers and chisels on models of plaster, hardened by boiling in strong alum water, or by absorbing dissolved bees' wax before a fire. The model is, as often as required, painted over with a colouring matter, as oil paint, to prevent its drying too soon. A block of ivory, cut to the proper size, is then laid horizontally on the model, when the paint leaves a speck at every point of contact. These points are cut out with the graver, the ivory is again applied, and the same process gone through, until the ivory presents an exact reverse of the model, and becomes in fact a mould of the jaw. To do this well is extremely tedious, although many dentists make short work of it, and apply the coloured points to the whetstone. The success in affording comfort to the

wearer of artificial teeth made in this way, and the price put on such work, are in general equally small, and will account for the advertisements which offer such things at less than half-price, &c. To form a piece of ivory so as to sit easy in the mouth, and not spring up at one point when pressed on at another, is by no means easy; nor can it ever be done by an unskilful artist, however neatly he may execute the work. The ivory must be applied in a horizontal position to the wet model every time, and at exactly the same points from first to last, otherwise it cannot be made to fit exactly. In some cases, an under jaw for instance, without double teeth on either side, may have one side much higher than the other, in consequence of the sockets being less absorbed on one side than the other. To save trouble, some persons would fit to such a model, applying the under surface of the ivory, suppose the size of a pack of cards, not horizontally, but at an angle, that would permit it to touch both sides of the jaw at once. On such a model, were one scientific and another purely mechanical dentist to form plates, the former having

never permitted the under surface of the bone to touch the model but in a perfectly horizontal position, while the latter adopted the quicker way of applying it slantingly to both sides at once, the plate made by the latter, although appearing to fit the model equally well as that of the former, will spring up on one side when touched, as in mastication, on the other, and no ingenuity can prevent it but at the expense of much pain to the wearer, from the use of strong springs and clasps; while the plate let down horizontally, and carefully cut with more than double the labour, will sit like a rock at every part, when pressed at any point. In this way plates of bone can be made to sit easy in any mouth without tying, and without extracting stumps or teeth that are firm, whatever be the shape of the jaw.

If you suppose the under jaw of an elderly person, where only the front teeth remain, and that artificial grinders are to be supplied in both sides of it, they may be constructed of one piece of ivory, or of a separate small piece for each side, and united by a bar, as it is called, passing

under the tongue, from one side to the other, inside the remaining natural front teeth, and forming the two pieces thus united into one frame. If it be necessary, in order to ensure the wearer of such artificial teeth in the comfortable use of them, that for both sides of the jaw they be constructed out of one solid piece of ivory; it will explain why artificial double teeth, in the under jaw, when those of both sides of it are united by means of a gold bar passing from one side of the mouth to the other, can never be made to wear comfortably, until at last, after much inconvenience, the gum has adapted itself to such a state of things; for no human ingenuity can set or join the component parts, or both sides together, by means of a bar, so perfectly as not to occasion injury to the wearer.

In attempting this process, such artificial teeth are fastened by strong clasps to the remaining front teeth, which, in consequence of being dragged by the unsteady motions of their new allies, become loose in their sockets, and drop out; or they waste away by the friction of such collars. This method is adopted to save the expense of a block

of ivory, as two small pieces appear to answer equally well, and this is one reason why mineral teeth invariably occasion the loss of the remaining sound ones. A dentist, then, who understands his business, will, in such case, not only not occasion injury to sound teeth, but by judiciously supporting them by artificial ones, well constructed, will cause them to last the remainder of life.

In explaining where gold or plates of ivory are to be preferred, it will readily be seen how, when the latter have been made to rest as easy on the gum as the former, they possess another grand requisite, bulk with lightness. The surface or scoop which is to rest on the gum, being completed, a proper form is given to the whole mass, and that form, as nearly as possible, what the jaw was previous to its losing a single tooth. Long before the block is reduced to its smallest dimensions, it is frequently introduced to the mouth, and made to undergo the same process by colouring the natural jaw as it was previously on its model, unless, indeed, as it sometimes will happen, that it fits the mouth at once. To fit in

the mouth, and on a model, are, in practice, very different things; and we accordingly find, that artificial teeth beautifully executed and adapted to a model, are frequently made only to be laid aside by the intended wearer as soon as sent home; for there are makers of artificial teeth that send them home, when finished on a model, like a coat or a shoe, for better or worse.

Ivory plates then, being specifically lighter than gold, have, in their proper place, from the quantity that may be employed, a decided advantage over gold, which, consisting of thin plates, is only applied as a basis to fasten teeth on, and not to fill up vacancies in the jaws; in addition to which advantage, the same piece of ivory may be made to represent gums as well as teeth. It also supplies the place of the lost sockets of the teeth, which, in reality, constitute the substance that swells out, and gives both length and breadth to the face about the mouth; for the gums never quit the living jaws, although they forsake the teeth, as is indicated by their roots becoming exposed when their sockets are absorbed, and the gums sinking down to the jaw-bone.

Cases occur where the union of ivory with gold is required, but even in these the gold must be raised on successive models of the mouth, and adapted with the same care and exactness as if no ivory were to be applied; that is, the gold plate must first be made to fit the gum, so that no pressure, as in mastication, should give pain; and the bone must be afterwards fitted down on the gold for a model, and formed into teeth, as if ivory only were to be used. This mode is applicable where a jaw has irregular vacancies, and remaining teeth and stumps of various lengths and unequal parts to be artificially filled up, and as the whole frame is much better for being of one unbroken piece, a gold plate is the preferable connecting substance, on account of its thinness. This plate is not to be confounded with the gold bars already alluded to. Without the adoption of this mixed plan, it would sometimes be necessary to reduce the ivory to so thin a state in some places, as to render it totally unfit for use. By a proper union of gold plates and ivory, a case wherein every other tooth was wanting, and the remaining ones almost of all shapes and sizes,

could be made comfortable without extracting any.

In order further to illustrate the advantages of a combination of gold and ivory, let us suppose a case where so many double teeth have been lost as to occasion a nearer approach of the chin to the nose than formerly, the natural consequence of which will be, that the front teeth of the one jaw, by the unceasing and forcible collision every time the mouth is shut, against those of the other, will loosen them in their sockets and grind them down. To obviate this, filing is often had recourse to, which is bad, in so far as it only produces a temporary advantage by violent means. The natural disposition of the alveolar processes, or sockets of the teeth, is to eject those that are without opponents in the other jaw. While the cause of the first inconvenience is permitted to remain, teeth shortened by filing soon lengthen again, for they quickly arrive at their old post, while the natural process of ejecting them produces ulceration of the membrane of the socket, which, in many persons, continues for life, or until such teeth are removed. The proper remedy

then, where an undue pressure of the front teeth of one jaw is exerted against those of the other, is to cap the remaining teeth with gold.

To understand the necessity of this, let any one examine the mouth of a person whose teeth are perfect. The front teeth of the two jaws when the mouth is shut, will be found in contact simply, and incapable of retaining forcible hold on any thin substance, as a piece of riband for instance; while the double teeth take a hold that no human power can shake without the consent of the party. Undue pressure was the cause of the front teeth becoming loose, and that cause may be removed temporarily by the introduction of a piece of card between the remaining grinders, any where in the mouth. Hence it will be seen, that the proper remedy for loose front teeth, is to cover the grinders over with caps of gold; for ivory, if reduced to the necessary degree of thinness, would soon be bitten through. The empty spaces between the remaining teeth might be filled up with ivory formed into teeth*, their

* Some essential improvements have contributed to the success of the art of dentists. First, by dint of following scrupulously

grinding surface being in the same level as those covered with gold, when so covered as to occasion an equal pressure on all the grinders; for if you make one tooth longer than the rest, all the pressure of the mouth comes upon it, and occasions inflammation in its sockets, accompanied with intolerable pain. The same effect is produced by a plug in the crown of a tooth if left too high, and that it can be felt on shutting its opponent against it.

In many cases teeth made of ivory alone will remedy the injury here alluded to, by keeping off the pressure of front teeth; but should any double tooth remain that is not permitted to touch its opponent in chewing as before, that tooth will soon become troublesome. Hence it is that sound teeth are frequently extracted, that an artificial piece of teeth may be applied with any tolerable chance of being useful.

Many persons, rather than have a sound tooth or even a useless one extracted, forego the advan-

all the inequalities of the gums, artificial teeth, placed upon a basis, meet with a much more suitable and steady support upon the gums.—LEVISON.

tages of artificial teeth, although possessed of the means and every inclination to possess them. To such it must be satisfactory to know, that artificial teeth can be applied to almost any case whatever, without extraction; and that those Dentists only recommend the extraction of sound teeth, who are unacquainted with the construction of artificial ones, or are too illiberal to recommend others*.

In a metropolis like this, where the division of labour, while it cannot injure the individual, is attended with advantage to the public, the art of the dentist admits of several subdivisions. Presuming on this, the author has long restricted

* Not one of the molares should be permitted to remain that has no antagonist, particularly if it is situated in the upper jaw; inasmuch as such teeth being deprived of that necessary stimulus which arises from mastication, their periosteum soon becomes relaxed, and consequently predisposed to this disease: besides, the utility of such teeth being lost by the want of an opposing surface to act against, they influence the surrounding parts, like extraneous bodies.

Every tooth which has lost its vitality, including all stumps, and all such teeth as from their irregular situation or direction, excite a mechanical irritation, provided this irregularity cannot be remedied by filing, or by cutting away the irritating parts, should also be removed.—L. Koecker.

himself to one department, viz. Preserving the Natural Teeth, and with a degree of success fully commensurate with his expectations. These operations consist in Scaling, that is, in freeing teeth from extraneous matter, and Brushing spongy gums into a healthy state; in Examining from time to time, teeth that, from their shape and situation, are liable to decay, and at the proper time Cutting out the commencement of caries, and thereby Preventing its farther progress by the introduction of gold stopping, by means of which a smooth even surface, incapable of retaining moisture long enough to rot in, is obtained, instead of the indentations where the caries commenced; in Curing tooth-ache and tender teeth by means of an Anodyne Cement, (the author's peculiar method), and cleansing them previous to their being permanently stopped in any approved manner, which operation they then admit of without pain, as if they had never ached; in Relieving children from tooth-ache, to prevent the premature extraction of shedding teeth; and after the teeth have been lost through accident, heedless extraction, or old age, in pointing out

the most appropriate mode of Supplying their place by artificial means, together with the person most likely to do it well.

In order fully to appreciate the advantages to be gained by artificial teeth and plates for the mouth, let us refer to the natural forms of the human mouth. In some, and they are by far the greatest number, the front upper teeth shut outside the under ones. In others, the cutting edges of the front teeth of both jaws meet in the same perpendicular line; while in the third case, those of the upper shut inside the under front teeth. This last form is called under-hung, or having a projecting chin*. A projecting chin, like squinting, is frequently the result of a bad habit acquired by imitation in early life, and is considered somewhat of a de-

* In the most general, and also the most regular, beautiful, and convenient conformation of the jaws, the teeth of the lower jaw, which is the segment of a smaller circle, shut within those of the upper. When this is not the case, the result is an unpleasing projection of the chin, and also a slight affection both of the voice and of the operation of masticating. As this conformation is both a deformity and inconvenience, it should be remedied at as early a period as possible; and if it be taken in time, its correction is neither dangerous nor difficult.—Andrew Clark.

formity. It is, in many instances, produced by the injudicious extraction of some of the upper teeth in early life, without removing an equal number in the under jaw*. Cases are to be met with where those of the upper jaw shut partly inside and partly outside their opponents in the under jaw. This is surely the result of negligence in early life, and might have very easily been remedied by any dentist; or even by the child himself, were the method explained to him: suppose, by the use of a thin slip of wood

* It is about the time of the completion of the first teeth that the projecting under jaw gradually begins to shew itself, and shortly before the appearance of the second set from the surface of the gum. At the first commencement it occurs that one or both of the first eye-teeth in the under jaw are somewhat longer than the rest, and are pointed on the top, so that in shutting the mouth the under jaw is so prevented taking its proper direction. The child not being aware of the pernicious consequences, stretches out the lower jaw, attempts in that manner to overcome the difficulty of the free action of the teeth, and constantly is seen in the act of pushing the lower jaw outwards: this unobserved or neglected at first, grows into a determined habit; and a mischief at first easily controlled, becomes the foundation of this defect; for the jaw gradually lengthens itself out from the articulation on each side, to relieve itself from the bad position in which it was placed, and thus the jaw becomes completely under hung. The remedy in the very early stage of the deformity is very easy, simple, and satisfactory.—SIGMOND.

or ivory, to serve as a bridge to assist the upper tooth over the under one.

Each of these three forms is liable to injuries peculiar to itself, although the remedy is much the same in all. Front teeth that shut over the under ones, if the support of the double teeth be removed, are pressed against them laterally every time the under jaw is raised in shutting, the natural consequence of which is, that the posterior surfaces of the upper ones are ground away, or they are loosened, their sockets becoming absorbed from incessant irritation. The same thing occurs in some persons even before the grinders have been lost, partly from the greater length natural to their front teeth than the back ones, and partly from the gradual abrasion of the surfaces of the double teeth. In such a case the cutting points of the upper front teeth reach at the under gum, or the under ones touch the roof of the mouth, and irritate and inflame it; the teeth all the while becoming loose, and the patient finding no relief but by placing something between the grinders of the two jaws to prevent the contact of those in

front. The remedy for this evil is extremely simple and effective, but the execution difficult, requiring great mechanical skill, and ability to work in metals. The grinders must be lengthened. To understand in what manner, suppose a piece of card placed betwen the double teeth when the mouth is shut, and by similarly using a plate of metal or of bone, formed into caps, as gloves fit the hands, with which the usual functions of teeth can easily be performed, the teeth thus covered are lengthened. This plan is sometimes adopted to fasten artificial palates where they are required, the plates being so constructed as to cover the whole roof of the mouth nearly as far back as the uvula*. In some instances, where the dif-

* Children are frequently born with malformation of the lips. Every species of this deformity is called hare lip. The fissure commonly affects only the lip itself. In many cases, however, it extends along the bones of the palate, even as far as the uvula. Sometimes these bones are totally wanting; sometimes they are only divided by a fissure. Such a malformation is always peculiarly afflicting. In its least degree, it constantly occasions considerable deformity; and where it is more marked, it frequently hinders the infants from sucking, and makes it indispensable to nourish them by other means. When the lower lip alone is affected, which is more rarely the case, the child can neither

ference in length between the front and back teeth is great, after the first plate of gold has

retain its saliva, nor learn to speak, except with the greatest impediment. But when the fissure pervades the palate, the patient not only never articulates perfectly, but cannot masticate or swallow, except with great difficulty, on account of the food readily getting up into the nose.

Hooper's Medical Dictionary.

The natural want, or the casual destruction of that delicate organ, the human palate, is attended with the most unpleasant of all effects, the loss of voice, and of the many substitutes which we have, very few have those advantages which could be wished. The common metallic palate seldom fits well, and always gives pain; while those of gum cautchoue, and other elastic substances, are offensive, and also by pressing asunder the parts, increase the deficiency. The removal of them all, for the purpose of cleaning, is a work of some trouble. We have seen a silver palate, constructed by Mr. Andrew Clark, a very ingenious dentist, which obviates many objections to the old construction. It fits the parts with the utmost nicety, and as it does not at all press upon the edges of the deficiency, it allows the parts to contract, or even to be to a certain extent reproduced, while the wearer can take it out, clean it, and replace it in two or three minutes. When it is to be removed or put in, the wings which fasten it to the upper side are made to collapse into a very small space; and after it is put in its place, they are made to expand and embrace the edges of the bone, with any degree of tightness that may be necessary. The whole machinery, which is very neat, is worked by a small button in the centre of the palate, so flat as to give no uneasiness to the tongue, and yet which can be moved with the greatest ease. Besides the facility with which this palate can be removed and replaced, the great advantage of it consists in the accuracy with which it fits the parts.

London Medical and Physical Journal.

been adapted to the jaw, layer after layer is soldered over it, until the teeth have attained the requisite length to prevent the contact of the front ones.

If the plate be on one jaw only, it never can be worn comfortably until the double teeth opposing it in the other jaw lock into it when the mouth is shut, as naturally as they formerly did into the surfaces of the natural teeth. This is accomplished by drying the teeth opposed to the plate, and touching them with paint. The patient shuts his mouth until the plate is touched by the paint. The points of contact are always cut away with the graver until all the teeth meet the plate fairly at every point, when no pain or inconvenience will any longer be experienced in using them. Rather than have recourse to a plate, many persons will submit to the loosening and loss of their front teeth, in order to have them artificially restored. One thing is evident from a knowledge of the above process, that the dentist who could render such a plate comfortable to the wearer, must himself be a competent workman; or the real

workman must be taken from the back shop to fit it in the mouth; but this is never done.

In animadverting thus on the practice of others, it is not the intention or wish of the author to injure them; but as far as possible to explain to the public what they have a right to expect, and that they, from a competent knowledge of their wants, may properly appreciate merit wherever it is to be found.

Beautifully executed artificial teeth, like decoy ducks, are to be seen hung out in windows, and in advertisements, when the parties professing to have made them cannot even bend a wire or a clasp to a tooth without breaking it. Such dentists, perhaps, never formed a single tooth from ivory, never raised a gold plate on a model, and never made the wearer of artificial teeth comfortable; and they never can. The real maker of artificial teeth, that is, the person who can do justice to his patient, has much to do in his presence; nor can his skill, or the want of it, be concealed from an observant patient. But he too frequently, perhaps gene-

rously, ascribes the apparently unconquerable difficulty to the art, and not to the artist.

If health be desirable to those who wish to live long, surely nothing contributes more to a healthy digestion than a good set of teeth. No pains then, it is presumed, can be too great on the part of the public and the profession to attain the utmost perfection of which the art is capable, and that can only be done by making public every improvement, and exposing humbug.

Suppose in a case like that attempted to be described as above, a front tooth decayed to the gum, and its root calculated to receive a new pivoted tooth. If the tooth whose place was to be supplied had decayed, or was otherwise injured, and lost in consequence of the lateral pressure of its opponent in the other jaw, that same pressure would still continue to affect its successor; and in order to avoid this, the new tooth is filed down so thin as scarcely to retain the gold pivot. This, then, would be a case of bungling. In the same instance, suppose the root also gone, in consequence of the tooth

originally becoming loose from friction; a plate or socket of gold, or of bone, would be necessary, on which to fasten the false tooth. The whole would be fastened to the adjoining teeth. The pressure of one jaw on the other being still the same, not only would the new tooth be constantly shaken in its place, but the tooth on each side to which it had been fastened. So backward is the state of the art that, in London, many dentists fasten false teeth to the adjoining firm ones, by means of silk ligatures; this will, of course, keep them in their place, although dangling and loose, until those to which they are made fast drop out, which, in general, is very soon the case. By-and-by a new piece with three false teeth would be required, with similar results and greater advantage to the dentists; and so on *ad infinitum*. For the truth of all this it is only necessary to refer to the great mass of wearers of artificial teeth. A dentist who understood his business, and had honour enough to practise it conscientiously, would decline the case altogether, unless permitted to accomplish it in his own way.

Many instances are to be met with in which fast teeth become loose from friction on an artificial one, where no necessity existed for such pressure, and all through the unskilfulness of the dentist. The author has met with cases where, for instance, the constant friction of the under natural teeth against the socket of an upper false one, had loosened two more, and produced ulceration of the gums; by cutting away the points of contact from the artificial socket, and recommending a discontinuance of the artificial tooth for a few days, the whole became well again, and was worn with comfort and advantage.

In treating of gold plates, it is necessary to explain how they are usually got up; as on this depends much of their utility and comfort.

A mould of the jaws to be supplied with artificial teeth, is taken from the mouth in wax softened in warm water, and introduced on a horse-shoe plate, turned up at the sides like a spoon. Into this mould is poured prepared plaster of Paris, which, when it has set, is easily disengaged by

re-introducing the whole into warm water, until the wax has again become soft. The exact form of the mouth is thus procured, if much care be bestowed on the process. When a plate of gold is wanted, a fac-simile of the plaster model is cast in brass, on which the gold plate is beaten into form. In the way gold is generally used one model will be sufficient; those dentists who excel use several; for the brass itself is soon put out of shape by the repeated strokes of the hammer. If any of the teeth are to be covered with caps, these caps must be formed out of the same plate, and they must fit every tubercle and indentation natural to the teeth they cover, as if melted on them. Otherwise they never can be used in mastication. In this way even carious teeth, where there is a dislike to extracting them, may be covered over and rendered serviceable. But the usual way is, to form the plate rudely to the gum and palate, bending it as may be required with pliers*. Such plates can never be

* The best mode of placing in the teeth, is strongly to rivet as many teeth as are wanting on a plate of gold made hollow, and fitted for the gum to rest in. The plate containing the teeth is at-

made to fit well; and in order to secure them in their place, they are fastened by strong collars to the remaining teeth. The natural consequence of which is, that sound teeth thus collared are soon dragged out by the roots, if any undue pressure be applied to the plates any where else. Such plates are very heavy, and by their weight alone drag out the teeth to which they are made fast.

Most dentists seem to think that thick plates are necessary, in order to preserve their shape; but others find the thinnest possible plates even better adapted, as every thing depends on the ac-

tached to the adjoining teeth by means of elastic gold claws, or springs, placed so as to embrace them. But this mode cannot be indiscriminately applied to every case.

When a partial deficiency of the teeth is supplied with judgment and skill, it is the means of preserving the remaining natural teeth, by becoming a support to them.

Entire sets of teeth are worn with great ease and satisfaction, when well made and rightly adapted. The construction and adaption of artificial teeth is an art in which some professors greatly excel others; there must, of consequence, be a variety in the value of their works. Some teeth are so ill made and unskilfully adapted, that they are troublesome to the wearer, an impediment to the speech and mastication, and even a greater blemish to the countenance than want of teeth; those that are well adapted are, on the contrary, easy, useful, and ornamental.—Joseph Murphy.

curacy with which the plate is made to fit the jaw at every part of it. The error originates in this, that the one uses gold in its hardest state, the other in its softest.

He who applies collars, is obliged to solder them on the plate. This process softens the gold; and as he solders pins for the false teeth to be fastened on, the plate cannot be beaten into a hard state on the model after that process, without upsetting completely the whole soldered concern. To counteract the pliability of a plate necessarily soft, a sufficient thickness is given to it, when, generally speaking, the patient who wears soldered collars for teeth is the sufferer. The dentist who can and does raise the gold plate on a succession of models, until he has obtained one so nicely adapted as to be unexceptionable, produces a plate extremely thin, and so hard, as to be very elastic. He employs no soldering; but he rivets on it the teeth intended to fill up vacancies. However thin the plate thus raised, from its natural elasticity, it embraces the remaining teeth and gums so comfortably, as to create no inconvenience; and the author has no

hesitation in asserting, that this principle, applied in all its ramifications, is capable of affording real comfort in almost any case whatever, without ever inflicting injury on the adjoining teeth*.

* The greatest improvement on the art of the dentist was a right understanding of the uses of the baek teeth; and it is still a matter of astonishment how very few of its professors have emerged from the ignoranee of the first dentists. The praetiee of the latter consisted in fastening the tooth or teeth to be inserted to the adjaeent teeth, by means of ligatures. An improvement on this method was to form the artifieial teeth of the hardest bone, so as to resemble nature, sockets of the same materials being left so as to resemble the gums. As the bone, from the moisture of the mouth, soon beeomes diseoloured, natural teeth began to be inserted on soekets of bone so nieely adapted to the parts for whieh they were intended, as to answer the purposes in mastication, &e. without ineonvenienee; and this method, variously modified, eontinues still to be the favourite praetiee with almost every dentist. The state of the back teeth is a matter of the first eonsideration to the sueeess of the operation of pivotting teeth on old stumps. If the back teeth are wanting, the jaws approaehing nearer than usual in mastication, a degree of friction on the front teeth ensues, which soon wastes or loosens them. In supplying artifieial teeth of every kind, this circumstanee ought always to be kept in view; otherwise the operation ean never prove honourable to the dentist, nor satisfaetory to the patient.

The fixing of artifieial teeth on gold plates properly adapted to the gums, is, from its universal applieability, perhaps the best mode now in use. It is, however, when properly exeeuted, the most difficult and least understood. Sueh are the late improvements by means of gold plates, that where every other method would fail, even

Thin as they are, those plates are frequently known to wear for years without even a repair; and the author is acquainted with one person's case, who has worn an upper set of handsome false teeth, set on a gold plate, without any other hold except the cap that covers an only remain-

in the ablest hands, they can succeed with certainty in this. It has, in fact, given a new tone to the art, and raised it above the imperfections so generally ascribed to it.

A common method of making these plates of gold was to form them into something like the shape of the parts to be supplied with teeth, by merely bending them with a pair of pliers, and forcing them into their intended place, which naturally forced out the teeth with which the plate came in contact; or if claws or springs were added, the same injurious result was produced. Those who improve on this method, have models of the mouth cast in brass, on which the plate was moulded in the way that dies are usually worked upon. So sensible of the difficulty of properly executing this model are many of the first dentists, that they never undertake it at all. The last improvement in gold plates was to cover over with caps, formed out of one plate, such back teeth or stumps as remained when partially worn down by attrition or decay, so as to prevent the contact of the front teeth in mastication.

A dentist who worked in bone only, would, when a case requiring a gold plate formed into caps for them occurred, be under the necessity of extracting such irregular teeth or stumps as interfered with his operations, or to make a covering of bone so fine as to break in mastication; whereas the use of such gold plate renders extraction unnecessary in every case where the teeth or fangs are not otherwise troublesome. But in many cases, the union of gold and bone are necessary to produce the desired effect.—ANDREW CLARK.

ing tooth, during nearly ten years, and the tooth is still firm in its socket: the rest of the set were sacrificed to the malpractices of bunglers. In the under jaw, the same gentleman has not lost a single tooth, and the first that was lost in the upper jaw was displaced by a blow.

The illustration of gold plates attempted above, was of a case where the front teeth were longer than the grinders, of which none had been lost; and of a case where all had disappeared but one. In this latter instance, had a strong collar and heavy plate been applied, there is no doubt that the solitary tooth would long since have shared the same fate as its former companions.

In the case of front teeth meeting in the same perpendicular line, it is observable that as we advance in years they become shorter and shorter until worn up to the jaw. This is occasioned by the waste that necessarily takes place by long use. In the other forms of the mouth, where the teeth of one jaw shut within those of the other, the front teeth rarely ever become shorter through life; for although the

double teeth are wasted and shortened by attrition, on their grinding surfaces, the front ones only waste laterally where they touch each other*. This process, although it thins and weakens, does not shorten them. Their edges, however, in consequence, frequently chip and break.

To prevent this, gold plates might advantageously be applied to the double teeth, in cases even where none of them have been lost; but the same effect is constantly produced in the mouths of young persons, from the loss of the grinders by extraction or decay; and let it be well considered, that for every tooth that is lost, an additional pressure and consequent injury to that amount is

* Abrasion of the teeth generally occurs in persons in whom the teeth are inclined to be under hung, and both jaws meet in contact, by which action the edges of the teeth in mastication are worked into deep and irregular cavities. The upper and under front teeth are generally the first that suffer, and in the space of a few years (if its mischievous progress be not prevented), it will spread on the grinding surface of every tooth, whose sharp edges, like cutting chisels, work imperceptibly, by constant friction. The crown of some teeth wearing thus in deep and irregular cavities, exposes the centre nerves of the teeth to pain, and produces dangerous ulceration on all sides of the tongue.—Sigmond.

inflicted on the remaining teeth*. This is partly the cause why in old persons the front teeth drop out whole, and to prevent so unwished for a consummation, early and continued attention must be paid to the teeth.

In conclusion, let it be remembered by the wearers of artificial teeth, that teeth, or roots already loose from the absorption of their sockets, had better be extracted, in order that their place may be supplied with more serviceable coadjutors to the other new teeth;—that artificial teeth, from one to a full set, must be subject to no pressure, those of one jaw against the teeth of the other, except where the broad surfaces of the grinders

* The loss, however, of a tooth is of more serious importance than we may probably imagine: there is always a disposition in the anterior and posterior, as well as the lateral sides of the socket, to approximate, and the pressure which the extracted tooth bore is thrown upon those contiguous to it; they have consequently to support an additional pressure, and their sockets become much sooner weakened than if the mouth had remained in its original state. A regular pressure on all the teeth is necessary, however, to their economy, and we will again consider another reason, why the extraction of a tooth should not be resorted to, without it is indispensably requisite. There is in the sockets a disposition to fill up, and thus the pressure of the two jaws against each other tends to counteract.—G. Waite.

meet in mastication; or be the cause of lateral pressure against the natural teeth, among which they are set;—that the wearers are not to rest satisfied with artificial teeth when applied, until perfectly easy when in use;—and that ease is attainable in any case whatever, by a few visits to the dentist who understands his business, for he can by degrees relieve the parts where the frame bears most heavily and painfully, so as not to injure the work, while he affords immediate relief, and, until at last the substitutes for teeth feel as part or parcel of the mouth itself.

CASES

Illustrative of the Foregoing Remarks on Artificial Teeth.

Case.—Mrs. ——— could never be induced by any suffering to submit to the extraction of a tooth; in consequence of which, she suffered severely, and for years, from that malady. The gums in front of the upper jaw were spongy and tumefied, emitting matter and blood as often as they were touched. So painful had they become, in addition to the pain arising from carious teeth, that she despaired of ever again being able to eat solid food; for she was then living almost entirely on slops. The following was the state of the mouth about the middle of the year 1828, which three years before was pronounced incapable of any cure by artificial means, by more than one of our London Dentists, whose names stand high in public estimation. In the under

jaw, the two eye-teeth were healthy, but wasted a good deal by the friction of the teeth opposed to them in the upper jaw. Beyond the eye-tooth on the left side all the teeth had disappeared with decay, with the exception of the second large grinder, and even that was broken away at the side next the cheek, so far as to expose the nerve. In front, between the eye-teeth, there were none remaining. In the right side, the two small and the first large grinders remained; but so deeply indented and worn down by the attrition of those that opposed them in the upper jaw, that they were too tender to be touched. In the upper jaw, the four front teeth, the two eye-teeth, with the two small grinders of the right side, and wisdom tooth, (this latter without an opponent below) still remained. In consequence of which it arrived at, and occasioned pain in, the under gum. On the left side there remained but one grinder; it was the middle one, and had no opponent in the under jaw.

The ordinary way of meeting such a case would be to declare the impossibility of rectifying the matter, without extracting all the tender teeth;

or at most to supply the front teeth in the under jaw, which would be fastened to the remaining eye-teeth: (this was actually tried at Bath,) the natural consequence of which method would be, that their constant rubbing against the upper teeth would loosen the eye-teeth to which the artificial ones were fastened.

Treatment.—The spongy gums were so tender at first, they could only be pressed, by rubbing the lip against them daily for a few days: by-and-by the finger was applied to them, and a very soft brush dipped in diluted spirits of wine; a great deal of blood and matter was by these means discharged from them: gradually a hard brush could be used without pain; and although these operations were painful at first, because performed repeatedly during the day; by suspending operations occasionally, as the gums became too tender, or were deprived of their skin, they at last became perfectly healthy and cleanly, with a very small quantity only of the pus occasionally oozing from the sockets of the teeth. Owing to long neglect, the corroding tartar had eaten into the necks of these front teeth, and ex-

posed the bone, which was black and tender. The Anodyne Cement completely allayed all pain in them, and in the other carious and wasted teeth. The rest was done by artificial means, by another dentist. The plan adopted by him was the following.

A gold plate was adapted to the under jaw, on which were riveted natural teeth in front, and bone formed into teeth for grinders. The carious grinder of the left side being covered over with a gold cap, and the original form of the tooth completed of ivory, the tooth could be used in chewing without pain. Those teeth in the right side that were wasted, required in parts to be lengthened; and on those parts of their gold caps that were sunken, ivory was formed into teeth, by means of which, formed into one frame, all pressure was removed from the sound eye-teeth, which were wasting laterally from the friction of the upper teeth. In the upper jaw a small gold case was made for each side, which being formed into caps for the remaining teeth, the spaces between were filled up with artificial teeth formed of ivory; by which various con-

trivances an equal pressure was exerted on all the grinders, and the front teeth were consequently saved from all further lateral friction, and abrasion. Shortly before last Christmas this lady went to the country, having the complete use of all her natural and artificial teeth, as perfectly, and, as she said, as satisfactorily, as if she had never suffered from them. It ought to be observed, that no trace of gold or artificial teeth could be observed on a casual glance at the lady's mouth.

Case.—Consequences of the application of a wrong principle in supplying artificial teeth.

A Gentleman had lost the two large grinders in the right side of his upper jaw, in consequence of which, the remaining wisdom tooth sunk to one side, and permitted an undue friction of the front teeth of the one jaw against those of the other, by which, the two front and left lateral incisors were loosened and lost. In supplying their place, in order to keep all fast, four teeth were put into the place of the three, the effect of which was that the space widened, the ad-

joining teeth being forced out of the dental circle.

Another dentist repaired the case in the following manner. A plate of gold was formed inside the upper front teeth, which extended to the remaining wisdom tooth, and made to cover it and the small grinders with caps. The place of the two lost grinders was supplied with ivory teeth, which were adjusted to the bite of their opponents in the under jaw, on the new level created by the gold caps of the wisdom tooth, and two small grinders. By this contrivance all pressure was removed from the front teeth. Three teeth only, the original number, were fastened on the gold plate, when the adjoining ones soon returned to their natural situation in the dental circle. To those who are unacquainted with such matters, it may be gratifying to learn that such artificial teeth can be removed with the same facility as a glove from the hand, and that no trace of the counterfeit is visible when the apparatus is in the mouth.

Case.—Dr. ——— had lost six teeth of the upper jaw, consisting of the two bicuspides,

first large grinder, and wisdom tooth of the right side, and the first large grinder and wisdom tooth of the left side. His teeth were naturally strong, and being too large for the jaws, those that were lost had decayed from lateral pressure. The remaining double tooth on each side, and the bicuspides of the left side, were much worn away from the friction of the corresponding under ones, which permitted the nearer approach of the front teeth, and they were also wasted in mastication; for they met laterally, and were worn to a mere shell; the teeth of the under jaw reached the gum at every shutting of the jaws, so that the thin points of the front teeth were constantly chipping away, and nothing but the great reduction in their length could induce him to have recourse to artificial aid.

In the ordinary way, the plan would be to fill up the vacancies merely with ivory teeth, fitted to them, or by a gold plate adapted to the parts, and embracing the two remaining grinders, by means of strong collars, on which ivory teeth should be fastened.

By the adoption of either of these plans, the remaining grinders must be permitted to touch their opponents in chewing as usual; the artificial teeth being adapted so as to admit of this (and by persons who operated indifferently, even these would be so short as not to touch their opponents, for fear of causing pain to the gums, from bad fitting); the natural consequence of which would be, that the front teeth of both jaws would continue to grind each other away in mastication as formerly. The plan adopted in this case was the forming of a thin gold plate, for the upper jaw, adapted to the gums, and covering the grinders with caps; (suppose a piece of card between them, which for the time effectually prevents the contact of the front teeth); the vacant spaces were filled up with artificial teeth, nicely adjusted, and on the new level of the remaining natural grinders covered with gold caps, and made to meet the under teeth, so that an equal pressure fell on the old and new ones. The front teeth are now safe from any chance of further wasting, and the gentleman can

use every part of his mouth, as effectually as he did before losing a tooth.

It ought to be remarked, whatever dentists may say to the contrary, that artificial teeth should be removed and replaced by the wearer, and should never occasion a day's uneasiness.

Case.—The first and second large grinders in each side of the jaw were wanting, and one of the two remaining (wisdom teeth) was hollow and aching. The upper jaw was defective, but not so much so as to require the aid of artificial teeth, although owing to the loss of four under double ones, the upper front teeth were fast wasting away from friction in mastication. The aching under-wisdom-tooth was cured by the Anodyne Cement, and regularly stopped with gold. To prevent the further wasting of the front teeth, a small gold plate was adapted to each side of the under jaw, and made to cover the two wisdom teeth and bicuspides on each side. The hollow spaces were filled with ivory, formed into artificial teeth, in size, appearance, &c. like those

whose places they supplied. They were raised to the same height as the teeth covered with caps, so that an equal pressure fell on all the double teeth of the set, as fairly as if none had ever been lost; while the front teeth, although seeming to touch, never touched one another in shutting the mouth. The preservation of the front teeth was the principal object to be attained by this method, but another was accomplished at the same time, as will be seen by the application of a different principle.

The same jaw might be supplied with ivory teeth only;—but from the extreme sensibility peculiar to the under gums, the pressure of artificial teeth would cause so much pain, as long use alone could reconcile any person to; by having a plate or saddle under them, resting on the gum, the extremities of which were formed into caps for the adjoining teeth, the pressure would be divided so equally as to create no inconvenience.

Were ivory only to be used in this case, the better way of making a plate would be to make it of one piece, and on a model of the

whole jaw. If properly made, by its fitting fairly in every part, as well in the hollows as in that connecting part of it, which passes under the tongue from side to side, such a frame could, after a few weeks, be used with comfort; but the preservation of the front teeth would not by this means be attainable, on this account, that the new teeth must have their grinding surfaces on the same level with the present level of the remaining natural grinders, to equalize the pressure, otherwise it could not be borne by the wearer.

Case.—The Marquis of ——— had lost the first and third large grinders of the right side of the under jaw, and the remaining middle large grinder was decayed so far as to lay bare the nerve. It was frequently affected with tooth-ache, which the Anodyne Cement allayed; but as it destroys nothing, the nerve still remained, and it being a case of long standing, it suppurated, in consequence of which, no attempt at a more permanent stopping was made.

In this case also the front teeth were wasting fast away; to prevent which a gold plate was

adapted to the affected side of the jaw,—the hollow tooth was covered over with a cap,—the vacancy on each side was filled up with artificial teeth, even to the absent half of the broken tooth; and his Lordship has now the perfect use of that side of his mouth in mastication; while all pressure being removed from the front teeth, it is reasonable to expect that they will last the remainder of his life.

The loss of front teeth from the waste or loss of the double teeth, is perhaps the most common case to be met with, and the most seldom remedied, unless the patient submits at least to the removal of all the remaining double teeth and stumps. The following case will serve as an illustration.

Suppose all the grinders, large and small, of the upper jaw to be wanting, while the under jaw is perfect; you have six front teeth, the two eye-teeth and four incisors, remaining: these are wasted away, or forced out at all angles, by the pressure of their under jaw opponents. A plate of ivory or of gold, with teeth on it, properly adapted to the roof of the mouth, will at

once restore the masticating apparatus, and be so constructed, as to keep off all pressure from the front teeth; but if even one grinder has been left, the whole of the new teeth must have their grinding surfaces on the same level with it, and the friction of the front teeth will continue to be as troublesome as ever. Let the remaining grinder, however, be covered with a cap, and let the new teeth be as high as the grinding surface of such cap, and the front teeth will be as safe as when a card is placed between two double teeth.

Case.—Admiral ——— had sustained the loss of all his teeth, except eight, and some stumps; the sockets had absorbed irregularly from the early extraction of some of the teeth, and the gradual decay of others. In the under jaw, one stump rose considerably out of the gum of the left side, and was very tender. Six of the remaining teeth were in this jaw, viz. a lateral incisor, eye-tooth, and bicuspis on each side; the two front incisors had been gradually loosened and expelled, while the two remaining ones were somewhat loose. In the upper jaw only two

sound teeth remained, with the roots of the others at every possible stage of decay. To remedy this case, two blocks of ivory were fitted to the jaws, and finished as already described in other cases, with this difference, that the two remaining upper teeth were covered over with caps, at the parts not usually seen. The loose teeth thus supported, became fast again, as their sockets had not been much absorbed.

The following case is that of a young Nobleman, and is sufficiently interesting. The complement of teeth in the under jaw was nearly complete. In the upper jaw only eight remained; viz. the two bicuspides, and eye-tooth of the left side, with the eye-tooth and only one large grinder of the right side, with the two front and one lateral incisor. The remaining large grinder was much decayed in the grinding surface, and ached, as did the first remaining small grinder of the other side, much decayed also from lateral pressure. Both the affected teeth were cured by the Anodyne Cement, and permanently stopped with gold; but the remaining ones were wearing fast away from the absence

of the grinders. The evil was more apparent, as the front teeth of both jaws met perpendicularly. In order to prevent the further wasting of the front teeth, a plate of gold was formed on a model of the mouth. The remaining large grinder that was plugged, was covered over with a cap, as were the two small grinders of the other side, except at the visible parts where the gold was cut away. The place of the lost grinders was supplied by ivory teeth, on the same level as the covered teeth; and now, although he has the perfect use of every part of his mouth, the front teeth do not meet, although they seem to meet, and consequently are not subject to further waste from attrition.

Perhaps many dentists will say that the above cases are easy, and such as they are daily accustomed to rectify. Those who really can do so, without creating annoyance to their patients, deserve the gratitude of the aged and the toothless.

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